S. HRG. 102-5 (Pt. 8)

NATIONAL ENERGY SECURITY ACT OF 1991

(Title IX)

HEARING

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

ONE HUNDRED SECOND CONGRESS

FIRST SESSION

ON

S. 341

TO REDUCE THE NATION'S DEPENDENCE ON IMPORTED OIL, TO PROVIDE FOR THE ENERGY SECURITY OF THE NATION AND FOR OTHER PURPOSES

MARCH 12, 1991

PART 8

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NATIONAL ENERGY SECURITY ACT OF 1991

(Title IX)

TUESDAY, MARCH 12, 1991

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The committee met, pursuant to notice, at 9:35 a.m. in room SD-366, Dirksen Senate Office Building, Hon. J. Bennett Johnston, chairman, presiding.

OPENING STATEMENT OF HON. J. BENNETT JOHNSTON, U.S. SENATOR FROM LOUISIANA

The CHAIRMAN. The hearing will come to order.

I first came to this committee 18 years ago. Shortly thereafter, the first energy crisis occurred. No, I did not cause it. As a matter of fact, I tried to cure it. Although history has not recorded my role in getting the King of Saudi Arabia to lift the oil embargo, I went and asked him to do so. When I write my memoirs I will record how I single-handedly was able to lift that embargo.

[Laughter.]

Seriously, the history of oil and the history of energy policy in this country since the embargo in 1973 has been a history of grandiose plans, extravagant rhetoric, and very little follow through. We remember President Nixon with Operation Independence when he said literally that we were not going to use any more imported oil, zero, zip.

President Ford came in shortly thereafter and adopted Project Independence, which was meant not to get us off all imported oil, but most imported oil. And the history ever since has been these extravagant claims and no action, increasing dependence on foreign oil and less domestic production. In the process America has had not one, but a total of three energy crises.

Make no mistake about it, the war in the Gulf was a war about energy. It was not only about energy, but it was much about energy.

Why is it that we have done this? Why is it that this country, even though we know better, continues to be more and more dependent on foreign oil and have less and less domestic production? Indeed, domestic production today is extremely low. The rig count is the lowest it has been in years.

If you look at the production curve of Prudhoe Bay and surrounding fields which provide 25 percent of domestic production, you can see that it is not going to increase, but in the next 10 years it is going to continue to decrease. In the process, we are spending billions for imported oil. The balance of payments in this country continues to go up, and oil continues to take one-third of it.

We have proposed an energy bill, which, if adopted, will reverse that trend. It will not be Project Independence. It will not get us off all foreign oil. But it will go a long way towards doing it. The theme of our bill is to include everything, not just take the extravagant claims of one group or the other, whether they are people who believe in ANWR or people who believe in CAFE standards, but take it all and balance it all.

If we do everything that is reasonable, everything that will work, then we can make this policy work as a country.

Today we deal with a very important part of that equation which is ANWR. How much oil is there in ANWR? Only God knows. Chevron may have a better idea than we do because they put one well out there, but nobody really knows. The estimates go all the way from zero in terms of commercially producible amounts to another Saudi Arabia. I think neither is correct. Maybe the average estimates of the Departments of the Interior and Energy, recently made, which as I recall are 600,000 to 800,000 barrels a day are correct.

I do not know, but any way you look at it, there is the potential for a lot of oil. We have to get away from these asinine statements that that is only 1 percent of all the world's oil or only so many days of oil. We have got to get away from that rhetoric because no one thing is going to do the job. We can say the same thing about everybody's pet project, whether it be a conservation project or whether it be oil production or nuclear power or whatever. All of these parts of this mosaic are a relatively small part of the total picture.

ANWR happens to be, perhaps, a pretty significant part. If it is as big as Prudhoe Bay, it could provide an additional 20-25 percent of new domestic production. In terms of revenue for this country, in terms of the balance of payment, in terms of American jobs, it is a big part of the picture.

One thing I do know is that if there is no oil in ANWR, there will be no scarring of the land because we know it can be drilled on ice roads in the wintertime. And if we do not produce it, we move off. In the spring the ice melts and there is no scar to the land.

Every bit of land in this country is sacred. Every bit of land has beauty in the eyes of some. Every bit of land has values. And ANWR is no exception. The fact that it is not a Serengetti does not mean that it is not valuable. Of course it is. In terms of commercial fish production, it has none. But that does not mean it does not have fish. Of course it does. The number of sport fishing days are measured in the dozens instead of the tens or hundreds of thousands as in my country where we drill a lot of oil, but it is still valuable.

It has got a lot of caribou and we think those are very important values. We are able to prove now from Prudhoe Bay that the caribou exist very well with humans and with oil drilling. In fact, the Central Arctic caribou herd has increased three times over since drilling in Prudhoe Bay.

The real question ought to be, can we drill ANWR, the 1002 area of ANWR, in an environmentally safe way? That is the real question. And if we can do that, then we ought to combine that with all we can do in terms of alternate energy, with all we can in terms of conservation, CAFE standards, the so called soft path, we need to do it all.

I believe the answer is very, very clear that we can drill ANWR is an environmentally safe way. If there is nothing there, there is not even a scar. If there is a huge amount of oil in ANWR we can produce it safely with a very small footprint. ANWR, after all, is a relatively unspoiled area, but it is not pristine. There is a village there, Kaktovik, which exists, if you will, as a blemish on this pristine area. It is not really a blemish, but it is not pristine either.

Let's not mistake tundra as being something that exists only in the 1002 area of Alaska. There are some 450,000 acres of tundra protected between the 1002 area and Canada as congressionally designated wilderness. There are hundreds of thousands of acres of tundra elsewhere in the world, but pristine and unspoiled. And it probably will be pristine and unspoiled for the rest of history as we know it because there is not much that you can do in tundra that is frozen most of the year. It is not very hospitable to walk on it even in the summertime.

I want to urge my colleagues, I want to urge everybody in this country to approach this energy problem as a national problem, not as some kind of political war pitting the environmentalists against the producers and the producers against the environmentalists. We need everybody's help on this piece of legislation if we are going to solve this energy problem.

We can solve this energy crisis if we will just pull together and take a comprehensive approach. What we are doing today is a very important part of that approach.

[The prepared statements of Senators Johnston and Shelby and the text of title IX of S. 341 follow:]

STATEMENT OF J. BENNETT JOHNSTON

THE PURPOSE OF TODAY'S HEARING IS TO RECEIVE TESTIMONY ON TITLE IX OF S.341--LEGISLATION TO PROVIDE FOR A COMPETITIVE OIL AND GAS LEASING PROGRAM ON THE COASTAL PLAIN OF THE ARCTIC NATIONAL WILDLIFE REFUGE IN ALASKA.

TODAY MARKS THE ELEVENTH TIME IN FOUR YEARS THAT THE ENERGY AND NATURAL RESOURCES COMMITTEE HAS MET TO CONDUCT A HEARING ON THE ISSUE OF OPENING ANWR. WE HAVE HEARD FROM SCORES OF WITNESSES ON ALL SIDES OF THE ISSUE AND HAVE COMPILED AN EXTENSIVE AND THOROUGH RECORD. THIS HEARING WILL BUILD ON THAT IMPRESSIVE RECORD AND I LOOK FORWARD TO HEARING FROM OUR WITNESSES.

OUR HEARING THIS MORNING TAKES PLACE AGAINST A BACKDROP OF TWO VERY SIGNIFICANT RECENT EVENTS.

FIRST, UNTIL TWO WEEKS AGO, THIS COUNTRY WAS ENGAGED IN A VERY COSTLY WAR OVER OIL. THE PERSIAN GULF WAR COST AMERICAN LIVES, BILLIONS OF TAXPAYER DOLLARS, AND INFLICTED WIDESPREAD SUFFERING AND HARDSHIP THROUGHOUT AN ENTIRE REGION OF THE WORLD. THIS WAR HAS ONCE AGAIN REMINDED THE AMERICAN PEOPLE: (1) HOW CRITICALLY IMPORTANT ENERGY IS TO OUR NATIONAL SECURITY; (2) TO WHAT LENGTHS WE AS A NATION ARE WILLING TO GO WHEN OUR ENERGY SECURITY IS SERIOUSLY THREATENED; AND (3) HOW BADLY WE AS A NATION NEED A COMPREHENSIVE ENERGY POLICY.

SECONDLY, FOR THE FIRST TIME SINCE I CAME TO THE SENATE IN 1972, WE HAVE BEFORE US SERIOUS LEGISLATIVE PROPOSALS TO FORMULATE

A COMPREHENSIVE, BALANCED, LONG TERM AND SENSIBLE NATIONAL ENERGY PLAN. THE "NATIONAL ENERGY SECURITY ACT" (S.341) WHICH SENATOR WALLOP AND I INTRODUCED ON FEBRUARY 6TH AND THE PRESIDENT'S NATIONAL ENERGY STRATEGY ACT (S.570) WHICH WE INTRODUCED BY REQUEST ON MARCH 6, WILL PROVIDE A FRAMEWORK FOR THE ENACTMENT OF SUCH A POLICY. LIKE PRESIDENT BUSH, I BELIEVE THAT OIL AND GAS LEASING ON THE COASTAL PLAIN OF ANWR SHOULD BE A KEY COMPONENT OF ANY SUCH POLICY.

IN MY VIEW, THE CASE FOR AUTHORIZING OIL AND GAS LEASING IN ANWR IS AS COMPELLING AS IT IS STRAIGHTFORWARD:

o FOR THE FORESEEABLE FUTURE, OIL WILL REMAIN A CRITICAL FUEL FOR THE UNITED STATES AND OTHER INDUSTRIALIZED NATIONS.

o OIL CONSUMPTION IN THE U.S. WILL CONTINUE TO INCREASE WHILE DOMESTIC PRODUCTION WILL DECLINE, RESULTING IN A SIGNIFICANT RISE IN FOREIGN OIL IMPORTS.

o ANY CREDIBLE NATIONAL ENERGY POLICY WILL HAVE TO CONSIDER ENERGY DEVELOPMENT AS WELL AS CONSERVATION.

o BY ANY MEASURE, THE COASTAL PLAIN OF ANWR REPRESENTS THE MOST HIGHLY PROSPECTIVE ONSHORE OIL AND GAS REGION LEFT IN THE UNITED STATES WHICH COULD PROVIDE BILLIONS OF BARRELS OF OIL AT A TIME WHEN OTHER NORTH SLOPE PRODUCTION WILL HAVE DECLINED SIGNIFICANTLY.

o THE TECHNOLOGY AND THE ENVIRONMENTAL SENSITIVITY OF OIL FIELD DEVELOPMENT IN THE ARCTIC HAVE EVOLVED STEADILY IN THE TWENTY YEARS SINCE PRUDHOE BAY WAS DESIGNED AND CONSTRUCTED. WITH THE ENVIRONMENTAL SAFEGUARDS BUILT INTO S.341, DEVELOPMENT CAN TAKE PLACE IN AN ENVIRONMENTALLY SOUND MANNER.

o FINALLY, THE COASTAL PLAIN OF ANWR IS NOT AS FRAGILE, UNDISTURBED AND UNIQUE AS SOME WOULD HAVE US BELIEVE. CERTAINLY THE AREA CONTAINS SOME SIGNIFICANT RESOURCE VALUES BUT.....

-- THE VEGETATION AND THE WILDLIFE INHABITING THIS AREA ARE WELL ADAPTED TO THE EXTREME ARCTIC ENVIRONMENT AND THERE IS NO BIOLOGICAL EVIDENCE TO SUPPORT THE POPULAR NOTION THAT WILDLIFE AND PLANTS IN THE REGION ARE FRAGILE THINGS, LIVING ON THE EDGE OF SURVIVAL.

-- ALTHOUGH HUMAN PRESENCE IN THE COASTAL PLAIN REGION HAS BEEN RELATIVELY LIGHT, THERE HAS BEEN, AND CONTINUES TO BE, EVIDENCE OF MAN IN THE AREA. THERE HAVE BEEN THREE DEW LINE STATIONS (ONE OF WHICH IS STILL ACTIVE), THERE IS A NATIVE VILLAGE, KAKTOVIK, WHICH HAS BEEN RELOCATED IN THE AREA THREE TIMES IN RECENT HISTORY, AND THERE HAS BEEN, AND CONTINUES TO BE CONSIDERABLE SUBSISTENCE ACTIVITIES IN THE AREA.

-- LASTLY, THERE IS LITTLE THAT IS BIOLOGICALLY UNIQUE ABOUT THE 1002 AREA IN RELATION TO OTHER PARTS OF THE ARCTIC COASTAL REGION. MANY OF THE LANDFORMS AND BIOLOGICAL RESOURCES

FOUND IN THIS AREA ARE FOUND ON ADJACENT LANDS, INCLUDING THE ALMOST 450,000 ACRES OF CONGRESSIONALLY DESIGNATED WILDERNESS BETWEEN THE 1002 AREA AND THE CANADIAN BORDER.

AS WE BEGIN WHAT I HOPE IS OUR LAST HEARING ON THIS SUBJECT, I URGE MY COLLEAGUES TO EXAMINE THE RECORD WE HAVE MADE ON THIS ISSUE, TO LOOK AT THE FACTS, AND RECOGNIZE THAT OIL DEVELOPMENT ON THE COASTAL PLAIN OF ANWR CAN MAKE A LASTING AND SIGNIFICANT CONTRIBUTION TO THE ENERGY SECURITY OF THIS NATION.

Richard Shelby

STATEMENT OF HON. RICHARD C. SHELBY,
U.S. SENATOR FROM ALABAMA

MR. CHAIRMAN, THE ISSUE BEFORE US TODAY IS MOST SENSITIVE IN NATURE. EMOTIONS RUN DEEP ON BOTH SIDES OF THIS QUESTION OF WHETHER OR NOT TO OPEN UP THE ARCTIC NATIONAL WILDLIFE REFUGE TO EXPLORATORY DRILLING.

ON ONE HAND, WE HAVE AMERICA'S MOST PROMISING SOURCE OF NEW DOMESTIC OIL. AN EXTENSIVE STUDY DONE BY THE DEPARTMENT OF INTERIOR FOUND THAT THE "1002" AREA IS "THE NATIONS BEST SINGLE OPPORTUNITY TO INCREASE SIGNIFICANTLY" DOMESTIC OIL PRODUCTION.

ON THE OTHER HAND, ENVIRONMENTAL GROUPS ARE CONCERNED ABOUT THE IMPACT ANWR DRILLING ON THE WILDLIFE-RICH ARCTIC ECOSYSTEM. SOME OF THESE GROUPS BELIEVE THAT ANWR SHOULD BE DESIGNATED AS A WILDERNESS AREA, WHICH, IN EFFECT, WOULD CLOSE THE AREA TO ANY POSSIBILITY OF OIL EXPLORATION AND DEVELOPMENT.

IT IS UNFORTUNATE, BUT WE CANNOT IGNORE THE FACT THAT DOMESTIC OIL PRODUCTION HAS BEEN ON A DOWNWARD SPIRAL BY AS MUCH AS 15% IN THE LAST TWO YEARS AND OIL IMPORTS ARE RESPONSIBLE FOR ABOUT 55% OF THE FOREIGN TRADE DEFICIT THAT CONGRESS CONTINUES TO GRAPPLE WITH.

FURTHERMORE, MR. CHAIRMAN, OUR RECENT EXPERIENCES IN THE GULF HAVE TAUGHT US A VERY PAINFUL LESSON. IT IS IMPERATIVE THAT THIS NATION REDUCE ITS DEPENDENCY ON FOREIGN OIL, PARTICULARLY IN THE HISTORICALLY VOLATILE AND UNSTABLE MIDDLE EAST. WE MUST WORK TOGETHER TO ACCOMPLISH THIS GOAL.

CONSERVATION ALONE IS NOT ENOUGH. DEVELOPMENT OF RENEWABLE ENERGY SOURCES ALONE IS NOT ENOUGH. IMPROVED EFFICIENCY ALONE IS NOT ENOUGH. PRODUCTION ALONE IS NOT ENOUGH.

AS WE MOVE CLOSER TO A COMPREHENSIVE NATIONAL ENERGY POLICY, SACRIFICES WILL BE REQUIRED FROM ALL SIDES. WE MUST MOVE FORWARD IN A SPIRIT OF COOPERATION, AND PUT ASIDE THE STRONGLY POLARIZED ATMOSPHERE THAT HAS CHARACTERIZED THE DEBATE ON ANWR. ROOM EXISTS FOR COMPROMISE. THERE IS NO BETTER ILLUSTRATION OF THAT FACT THAN OUR EXPERIENCE AT PRUDHOE BAY.

THE SAFETY AND ENVIRONMENTAL RECORD OF PRUDHOE BAY IS IMPECCABLE AND HAS BEEN PRAISED BY OFFICIALS WITH THE U. S. FISH AND WILDLIFE SERVICE IN ALASKA. THE AREA WILDLIFE CONTINUES TO PROSPER. IN FACT, THE CENTRAL ARCTIC CARIBOU HERD HAS SOARED FROM THREE THOUSAND IN 1972 TO ITS CURRENT POPULATION OF BETWEEN FIFTEEN AND EIGHTEEN THOUSAND. EVEN MANY OF THE NATIVE ALASKANS WHO FEARED THE DEVELOPMENT OF PRUDHOE BAY ARE SUPPORTIVE OF ANWR BECAUSE OF THE POSITIVE CONTRIBUTION OF PRUDHOE BAY TO THEIR QUALITY OF LIFE.

AS I BELIEVE GOVERNOR HICKEL WILL POINT OUT, THE MAJORITY OF THE ALASKAN PEOPLE SUPPORT OPENING ANWR FOR EXPLORATION. I, FOR ONE, AGREE WITH THEIR JUDGEMENT AND BELIEVE THAT THEY HAVE THE INTERESTS OF THEIR STATE AND NATION AT HEART.

SHOULD OIL BE FOUND IN ANWR, THOUSANDS OF JOBS WOULD BE CREATED, NOT ONLY IN ALASKA, BUT ALSO IN OTHER AREAS OF THE COUNTRY. THE NATION'S TRADE BALANCE WOULD BENEFIT BY SEVERAL BILLION DOLLARS AND THE IMPROVEMENTS IN EXISTING PROGRAMS AND CONSERVATION INITIATIVES, AS PROVIDED FOR BY ANWR REVENUES UNDER THE PROVISIONS OF S. 341, COULD SOAR TO UNPRECEDENTED HEIGHTS.

MR. CHAIRMAN, WE MUST FIND OUT WHAT IS UNDER ANWR. IF THERE IS A VAST POOL OF OIL SIMILAR TO PRUDHOE BAY OR LARGER, IT WOULD BE MOST UNWISE TO LEAVE IT THERE.

I AM CONFIDENT THAT EXPLORATION AND RECOVERY CAN TAKE PLACE IN AN ENVIRONMENTALLY RESPONSIBLE MANNER. WHATEVER DIFFERENCES WE ENCOUNTER AS WE WORK OUR WAY THROUGH THIS ISSUE, WE MUST ACCEPT THE MANDATE TO BUILD A CONSENSUS BASED, ECONOMICALLY AND ENVIRONMENTALLY SOUND NATIONAL ENERGY POLICY. I BELIEVE ANWR EXPLORATION IS A NECESSARY COMPONENT OF SUCH A POLICY.

II

102D CONGRESS
1ST SESSION

S. 341

To reduce the Nation's dependence on imported oil, to provide for the energy security of the Nation and for other purposes.

IN THE SENATE OF THE UNITED STATES

FEBRUARY 5 (legislative day, JANUARY 3), 1991

Mr. JOHNSTON (for himself and Mr. WALLOP) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

---

A BILL

To reduce the Nation's dependence on imported oil, to provide for the energy security of the Nation and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be referred to as the "National Energy Security Act of 1991".

* * * * * * *

TITLE IX—OIL AND GAS LEASING IN THE ARCTIC NATIONAL WILDLIFE REFUGE

Subtitle A—Statement of Purpose and Policy and Definitions

SEC. 9101. PURPOSE AND POLICY.—The Congress hereby declares that it is the purpose and policy of this title:

(a) to authorize competitive oil and gas leasing and development to proceed on the Coastal Plain in a manner consistent with protection of the environment, maintenance of fish and wildlife and their habitat, and the interests of the area's subsistence users; and

(b) to provide a new source of funding for energy related programs and projects designed to enhance the Nation's energy security and reduce dependence on imported oil.

SEC. 9102. DEFINITIONS.—When used in this title the term—

(a) "Coastal Plain" means that area identified as such on the map entitled "Arctic National Wildlife Refuge", dated August 1980, as referenced in section

1002(b) of the Alaska National Interest Lands Conservation Act of 1980 (16 U.S.C. 3142(b)(1)) comprising approximately one million five hundred forty-nine thousand acres; and

(b) "Secretary" means the Secretary of the Interior or the Secretary's designee.

Subtitle B.—Congressional Determination of Compatibility

SEC. 9201. CONGRESSIONAL DETERMINATION.—Congress hereby determines that oil and gas activities authorized and conducted on the Coastal Plain pursuant to this title so as to result in no significant adverse effect on fish and wildlife, their habitat, and the environment, shall be deemed to be compatible with the major purposes for which the Arctic National Wildlife Refuge was established and no further findings or determinations of compatibility by the Secretary under the National Wildlife Refuge System Administration Act (16 U.S.C. 668 dd(d)(1)(A)) are required to implement this Congressional determination.

Subtitle C.—Coastal Plain Competitive Leasing Program

SEC. 9301. LEASING PROGRAM FOR LANDS WITHIN THE COASTAL PLAIN.—(a) The Congress hereby authorizes and directs the Secretary and other appropriate Federal officers and agencies to take such actions as are necessary to establish and implement a competitive oil and gas leasing program that will result in an environmentally sound program for the exploration, development, and production of the oil and gas resources of the Coastal Plain. Activities pursuant to such program shall be undertaken:

(1) in accordance with the standards for protection of the environment as required by subtitle D of this title; and

(2) in a manner to ensure the receipt of fair market value by the public for the mineral resources to be leased.

(b) This title shall be the sole authority for leasing on the Coastal Plain.

SEC. 9302. RULES AND REGULATIONS.—(a) The Secretary shall prescribe such rules and regulations as may be necessary to carry out the purposes and provisions of this title, including rules and regulations relating to protection of the environment of the Coastal Plain, as required by subtitle D of this title. Such rules and regulations shall be promulgated within nine months after the date of enactment of this title and shall, as of their effective date, apply to all operations conducted under a lease issued or maintained under the provisions of this title and all operations on the Coastal Plain related to the exploration, development and production of oil and gas.

(b) In the formulation and promulgation of rules and regulations under this title, the Secretary shall request and give due consideration to the views of appropriate officials of the State of Alaska and the Government of Canada. The Secretary shall also consult with the Environmental Protection Agency and the Army Corps of Engineers in developing rules and regulations relating to the environment.

(c) The Secretary shall periodically review and, if appropriate, revise the rules and regulations issued under subsection (a) of this section to reflect any significant biological, environmental, or engineering data which come to the Secretary's attention.

SEC. 9303. ADEQUACY OF DEPARTMENT OF THE INTERIOR'S LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT.—(a) The "Final Legislative Environmental Impact Statement" (April 1987) on the Coastal Plain prepared pursuant to section 1002 of the Alaska National Interest Lands Conservation Act of 1980 (16 U.S.C. 3142), and section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)), is hereby found by the Congress to be adequate to satisfy the legal requirements under the National Environmental Policy Act of 1969 with respect to actions authorized to be taken by the Secretary to develop and promulgate the regulations for the establishment of a leasing program authorized by this title prior to conducting the first lease sale.

(b) Except as provided in subsection (a) of this section, nothing in this title shall be considered or construed as otherwise limiting or affecting in any way the applicability of section 102(2)(C) of the National Environmental Policy Act of 1969 to all phases of oil and gas leasing, exploration, development and production and related activities conducted under or associated with the leasing program authorized by this title, nor shall anything in this title be considered or construed as in any way limiting or affecting the applicability of any other Federal or State law relating to the protection of the environment.

SEC. 9304. LEASE SALES.—(a) Lands may be leased pursuant to the provisions of this title to any person qualified to obtain a lease for deposits of oil and gas under the Mineral Leasing Act, as amended (30 U.S.C. 181).

(b) The Secretary shall, by regulation, establish procedures for—

(1) receipt and consideration of sealed nominations for any area in the Coastal Plain for inclusion in, or exclusion from, a lease sale;

(2) public notice of and comment on designation of areas to be included in, or excluded from, a lease sale;

(3) review by the State of Alaska and local governments in Alaska which may be impacted by the proposed leasing; and

(4) periodic consultation with the State of Alaska and local governments in Alaska, oil and gas lessees, and representatives of other individuals or organizations engaged in activity in or on the Coastal Plain including those involved in subsistence uses and recreational activities.

(c) The Secretary shall, by regulation, provide for lease sales of lands on the Coastal Plain. When lease sales are to be held, they shall occur after the nomination process provided for in subsection (b) of this section. For the first lease sale, the Secretary shall, consistent with the requirements set forth in subtitle D of this title, offer for lease those acres receiving the greatest number of nominations, but not to exceed a total of three hundred thousand acres. If the total acreage nominated is less than three hundred thousand acres, he shall include in such sale any other acreage which he believes has the highest resource potential, but in no event shall more than three hundred thousand acres of the Coastal Plain be offered in such sale. Thereafter, no more than three hundred thousand acres of the Coastal Plain may be leased in any one lease sale. The initial lease sale shall be held within eighteen months of the issuance of final regulations by the Secretary. The second lease sale shall be held thirty-six months after the initial sale, with additional sales conducted every twenty-four months thereafter so long as sufficient interest in development exists to warrant, in the Secretary's judgment, the conduct of such sales.

(d) Areas of the Coastal Plain deemed by the Secretary to be of particular environmental sensitivity may be excluded from leasing by the Secretary. The Secretary shall notify the Committee on Energy and Natural Resources of the United States Senate and the Committee on Interior and Insular Affairs of the United States House of Representatives ninety days in advance of excluding any such areas from leasing. If the Secretary later determines that exploration, development, or production will result in no significant adverse effect on fish and wildlife, their habitat, and the environment, the Secretary shall, consistent with the provisions of subsection (c) of this section, offer such lands for leasing.

SEC. 9305. GRANT OF LEASES BY THE SECRETARY.—(a) The Secretary is authorized to grant to the highest responsible qualified bidder by sealed competitive bid any lands to be leased on the Coastal Plain upon payment by the lessee of such bonus as may be accepted by the Secretary and of such royalty as may be fixed in the lease, which shall be not less than 12½ per centum in amount or value of the production removed or sold from the lease.

(b) The Secretary shall not accept a bid for a lease if the Secretary finds, after notice and hearing, that the bidder is not meeting diligent development requirements on any other Federal mineral lease.

(c) ANTITRUST REVIEW.—(1) Following each notice of a proposed lease sale and before the acceptance of bids and the issuance of leases based on such bids, the Secretary shall allow the Attorney General, in consultation with the Federal Trade Commission, thirty days to review the results of such lease sale, except that the Attorney General, after consultation with the Federal Trade Commission, may agree to a shorter review period.

(2) The Attorney General may, in consultation with the Federal Trade Commission, conduct such antitrust review on the likely effects the issuance of such leases would have on competition as the Attorney General, after consultation with the Federal Trade Commission, deems appropriate and shall advise the Secretary with respect to such review. The Secretary shall provide such information as the Attorney General, after consultation with the Federal Trade Commission, may require in order to conduct any antitrust review pursuant to this paragraph and to make recommendations pursuant to paragraph (3) of this subsection.

(3) The Attorney General, after consultation with the Federal Trade Commission, may make such recommendations to the Secretary, including the nonacceptance of any bid or the imposition of terms or conditions on any lease, as may

be appropriate to prevent any situation inconsistent with the antitrust laws. If the Secretary determines, or if the Attorney General advises the Secretary, after consultation with the Federal Trade Commission and prior to the issuance of any lease, that such lease would create or maintain a situation inconsistent with the antitrust laws, the Secretary may—

(A) refuse to accept an otherwise qualified bid for such lease, or refuse to issue such lease, notwithstanding subsection (a) of this section; or

(B) modify or impose terms or conditions on the lease, consistent with advice provided by the Attorney General.

(4) The Secretary may issue a lease notwithstanding adverse advice from the Attorney General, or refuse to impose recommended terms or conditions, if the Secretary makes specific findings that approval of the lease is necessary to carry out the purposes of this title, that approval is consistent with the public interest, and that there are no reasonably available alternatives that would have significantly less anticompetitive effects. In such event, the Secretary must notify the lessee and the Attorney General of such findings.

(5) Nothing in this subsection shall restrict the authority of the Attorney General, the Federal Trade Commission, or any other Federal department or agency to secure informa-

tion, conduct reviews, make recommendations, or seek appropriate relief.

(d) SECRETARY'S APPROVAL FOR SALE, EXCHANGE, ASSIGNMENT, OR OTHER TRANSFER OF LEASES.—No lease issued under this title may be sold, exchanged, assigned, or otherwise transferred except with the approval of the Secretary. Prior to any such approval, the Secretary shall consult with, and give due consideration to the views of, the Attorney General.

(e) NO ANTITRUST IMMUNITY OR DEFENSES.—Nothing in this title shall be deemed to convey to any person, association, corporation, or other business organization immunity from civil or criminal liability, or to create defenses to actions, under any antitrust law.

(f) DEFINITIONS.—As used in this section, the term—

(1) "antitrust review" shall be deemed an "antitrust investigation" for the purposes of the Antitrust Civil Process Act (15 U.S.C. 1311).

(2) "antitrust laws" means those Acts set forth in Section 1 of the Clayton Act, 15 U.S.C. 12, as amended.

SEC. 9306. LEASE TERMS AND CONDITIONS.—An oil and gas lease issued pursuant to this title shall—

(a) be for a tract consisting of a compact area not to exceed two thousand five hundred sixty acres;

(b) be for an initial period of ten years and shall be extended for so long thereafter as oil or gas is produced in paying quantities from the lease or unit area to which the lease is committed or for so long as drilling or reworking operations, as approved by the Secretary, are conducted on the lease or unit area;

(c) require the payment of royalty as provided for in section 9305 of this title;

(d) require approval of an exploration plan, as provided for in section 9307 of this title;

(e) require approval of a development and production plan, as required in section 9307 of this title;

(f) require posting of bond required by section 9308 of this title;

(g) provide for the suspension of the lease during the initial lease term or thereafter pursuant to section 9309 of this title;

(h) provide for the cancellation of the lease during the initial lease term or thereafter pursuant to section 9310 of this title;

(i) contain the terms and conditions relating to protection of fish and wildlife, their habitat, and the environment, as required by subtitle D of this title;

(j) contain such rental and other provisions as the Secretary may prescribe at the time of offering the area for lease; and

(k) contain such other provisions as the Secretary determines necessary to ensure compliance with the provisions of this title and the regulations issued thereunder.

SEC. 9307. EXPLORATION AND DEVELOPMENT AND PRODUCTION PLANS.—

(a) EXPLORATION PLANS.—All exploration activities pursuant to any lease issued or maintained under this title shall be conducted in accordance with an approved exploration plan or an approved revision of such plan. Prior to commencing exploration pursuant to any oil and gas lease issued or maintained under this title, the holder thereof shall submit an exploration plan to the Secretary for approval. Such plan may apply to more than one lease held by a lessee in any region of the Coastal Plain, or by a group of lessees acting under a unitization, pooling, or drilling agreement, and shall be approved by the Secretary if the Secretary finds that such plan is consistent with the provisions of this title and other applicable law.

(b) OIL AND GAS DEVELOPMENT AND PRODUCTION PLANS.—All development and production pursuant to a lease issued or maintained pursuant to this title shall be conducted in accordance with an approved development and production plan. Prior to commencing development or production pursuant to any oil and gas lease issued or maintained under this title, the holder thereof shall submit a development and production plan to the Secretary for approval. Such plan may apply to more than one lease held by a lessee in any region of the Coastal Plain, or by a group of lessees acting under a unitization, pooling, or drilling agreement, and shall be approved by the Secretary if the Secretary finds that such plan is consistent with the provisions of this title and other applicable law.

(c) REQUIREMENTS APPLICABLE TO EXPLORATION PLANS AND DEVELOPMENT AND PRODUCTION PLANS.—Exploration plans and development and production plans shall include where applicable—

(1) the names and legal addresses of the following persons: the operator, contractors, subcontractors and the owners or lessees other than the operator;

(2) a map or maps showing: (A) the location of a point of reference selected by the operator within the area covered by the plan of operations showing, in relation to that point, existing and proposed access routes or roads within the area, the boundaries of proposed surface disturbance and location of all survey lines; (B) the location of proposed drilling sites, wellsite

layout, and all surface facilities; (C) sources of construction materials within the area including but not limited to gravel; and (D) the location of ancillary facilities including but not limited to camps, sanitary facilities, water supply, disposal facilities, pipelines, fuel storage facilities, storage facilities, base of operations, and airstrips. A point of reference selected by the operator within the area of operations shall be marked with a ground monument;

(3) a description of: (A) all surface and ancillary facilities, including but not limited to camps, sanitary facilities, water supply, disposal facilities, pipelines, fuel storage facilities, storage facilities, base of operations, and airstrips; and (B) the major equipment to be used in the operations, including but not limited to equipment and methods for the transport of all waters used in or produced by operations, and of the proposed method of transporting such equipment within the area covered by the plan of operations including to and from the site;

(4) an estimated schedule for any phase of operations of which review by the Secretary is sought and the anticipated date of operation completion;

(5) the nature and extent of proposed operations;

(6) plans for reclamation, including:

(A) the anticipated reclamation work to be performed;

(B) a proposed schedule of reclamation activities to be performed; and

(C) a detailed estimate of reclamation costs;

(7) methods for disposal of all wastes and hazardous and toxic substances;

(8) an affidavit stating that the operations planned will be in compliance with all applicable Federal, State, and local laws and regulations;

(9) contingency plans in case of spills, leaks, or other accidents; and

(10) such additional information as may be required by the Secretary to ensure that the proposed activities are consistent with this title, as well as other applicable Federal and State environmental laws.

(d) PROCEDURES FOR PLAN APPROVAL.—(1) After an exploration or development and production plan is submitted for approval, the Secretary shall promptly publish notice of the submission and availability of the text of the proposed plan in the Federal Register and a newspaper of general circulation in the State of Alaska and provide an opportunity for written public comment.

(2) Within one hundred twenty days after receiving an exploration or development and production plan, the Secre-

tary shall determine, after taking into account any comment received under paragraph (1) of this subsection, whether the activities proposed in the plan are consistent with this title and other applicable provisions of Federal and State law. If that determination is in the affirmative, the Secretary shall return the plan along with a statement of any modifications necessary for its approval. The Secretary, as a condition of approving any plan under this section—

(A) may require modifications to the plan that the Secretary considers necessary or appropriate to make it consistent with this title and other applicable law. The Secretary shall assess reasonable fees or charges for the reimbursement of all necessary and reasonable research, administrative, monitoring, enforcement, and reporting costs associated with reviewing the plan and monitoring its implementation; and

(B) shall require such periodic reports regarding the carrying out of the drilling and related activities as may be necessary or appropriate for purposes of determining the extent to which the plan is being complied with and the effectiveness of the plan in ensuring that the drilling and related activities are consistent with this title and other applicable provisions of Federal and State law.

(e) MODIFICATION OF PLANS.—If at any time while activities are being carried out under a plan approved under this section, the Secretary, on the basis of available information, determines that the continuation of any particular activity under the plan is likely to result in a significant adverse effect on fish or wildlife, their habitat, or the environment, the Secretary, after consultation with the lessee shall—

(1) make modifications to part or all of the plan as necessary or appropriate to avoid the significant adverse effect;

(2) temporarily suspend part or all of the drilling or related activity under the plan for such time as the Secretary considers necessary or appropriate to avoid such significant adverse effect; or

(3) terminate and cancel the plan where actions under paragraphs (1) or (2) will not avoid the significant adverse effect.

SEC. 9308. BONDING REQUIREMENTS.—(a) REQUIREMENT FOR PERFORMANCE BOND.—After approval of an exploration or development and production plan, the lessee shall be required to file with the Secretary a suitable performance bond. The bond shall be conditioned upon compliance with all the terms and conditions of the lease and all applicable laws. Such performance bond is in addition to and not in lieu of any bond or security deposit required by other regulatory authorities or required by any other provision of law. The lessee may file either a surety bond, or a personal bond consisting of cash or negotiable Treasury bonds of the United States. When negotiable Treasury bonds serve as the personal bond, they shall be accompanied by a proper conveyance to the Secretary of full authority to sell such securities in case of a default in the performance of the terms and conditions of the lease.

(b) AMOUNT OF PERFORMANCE BOND.—The performance bond shall be in an amount:

(1) to be determined by the Secretary to provide for reclamation of the lease site in accordance with an approved or revised exploration or development and production plan; plus

(2) an amount set by the Secretary consistent with the type of operations proposed, to provide the means for rapid and effective cleanup, and to minimize damages resulting from an oil spill, the escape of gas, refuse, domestic wastewater, hazardous or toxic substances, or fire caused by oil and gas activities.

(c) ADJUSTMENT OF BOND TO CONFORM TO REVISED PLAN.—In the event that an approved exploration or development and production plan is revised, the Secretary may adjust the amount of the bond to conform to such modified plan.

(d) DURATION OF BOND.—The responsibility and liability of the lessee and its surety under the bond or security deposit shall continue until such time as the Secretary determines that there has been compliance with the terms and conditions of the lease and all applicable law.

(e) TERMINATION OF LIABILITY.—Within sixty days after determining that there has been compliance with the terms and conditions of the lease and all applicable laws, the Secretary, after consultation with affected Federal and State agencies, shall notify the lessee that the period of liability under the bond or security deposit has been terminated.

SEC. 9309. LEASE SUSPENSION.—The Secretary may direct or assent to the suspension of operations and production under any lease granted under the terms of this title: (1) in the interest of conservation of the resource; (2) where there is no available system to transport the resource; or (3) where there is a threat of a significant adverse effect upon fish or wildlife, their habitat or the environment. If such a suspension is directed or assented to by the Secretary, any payment of rental prescribed by such lease shall be suspended during such period of suspension of operations and production, and the term of the lease shall be extended by adding any such suspension period thereto.

SEC. 9310. LEASE CANCELLATION.—(a) CANCELLATION OF NONPRODUCING LEASE.—Whenever the owner of a nonproducing lease fails to comply with any of the provisions of this title, or of any applicable provision of Federal or State environmental law, or of the lease, or of any regulation issued under this title, such lease may be cancelled by the Secretary if such default continues for the period of thirty days after mailing of notice by registered letter to the lease owner at the lease owner's record post office address.

(b) CANCELLATION OF PRODUCING LEASE.—Whenever the owner of any producing lease fails to comply with any of the provisions of this title, or of any applicable provision of Federal or State environmental law, or of the lease, or of any regulation issued under this title, such lease may be forfeited and cancelled by any appropriate proceeding brought by the Secretary in any United States district court having jurisdiction under the provisions of this title.

(c) ADDITIONAL PROVISIONS.—(1) In addition to the authority for lease cancellation provided for by subsections (a) and (b) of this section, any lease may be cancelled at any time, if the Secretary determines, after a hearing, that—

(A) continued activity pursuant to such lease is likely to result in a significant adverse effect to fish or wildlife, their habitat, or the environment, or is likely to result in serious harm or damage to human life, to property, or to the national security or defense; and

(B) the likelihood of a significant adverse effect will not disappear within a reasonable period of time or the threat of harm or damage will not disappear or decrease to any acceptable extent within a reasonable period of time.

(2) Such cancellation shall not occur unless and until operations under such lease or permit shall have been under suspension, or temporary prohibition, by the Secretary, with due extension of any lease term continuously for a period of five years, or for a lesser period upon request of the lessee.

(3) Cancellation under this subsection shall entitle the lessee to receive such compensation as the lessee demonstrates to the Secretary to be equal to the lesser of (A) the fair market value of the cancelled rights as of the date of cancellation, taking account of both anticipated revenues from the lease and anticipated costs, including the costs of compliance with all applicable regulations and operating orders, liability for cleanup costs or damages, or both, in the case of an oil spill or spill of other hazardous or toxic materials, fines, damages, penalties, or removal costs assessed pursuant to section 9315 of this title or other State or Federal environmental laws, any fees paid pursuant to section 9503 of this title, and all other costs reasonably anticipated on the lease; or (B) the excess, if any, over the lessee's revenues

from the lease (plus interest thereon from the date of receipt to the date of reimbursement) of all consideration paid for the lease and all direct expenditures made by the lessee (exclusive of any fines, damages, penalties, or removal costs assessed pursuant to section 9315 of this Act or other State or Federal environmental laws, and any fees paid pursuant to section 9503 of this Act) after the date of issuance of such lease and in connection with exploration or development, or both, pursuant to the lease (plus interest on such consideration and such expenditures from date of payment to date of reimbursement).

SEC. 9311. ASSIGNMENT OR SUBLETTING OF LEASES.—No lease issued under the authority of this title shall be assigned or sublet, except with the consent of the Secretary.

SEC. 9312. RELINQUISHMENT.—The lessee may, at the discretion of the Secretary, be permitted at any time to make written relinquishment of all rights under any lease issued pursuant to this title. The Secretary shall accept the relinquishment by the lessee of any lease issued under this title where there has not been surface disturbance on the lands covered by the lease.

SEC. 9313. UNITIZATION.—For the purpose of conserving the natural resources of any oil or gas pool, field, or like area, or any part thereof and in order to avoid the unnecessary duplication of facilities, to protect the environment of the Coastal Plain, and to protect correlative rights, the Secretary shall require to the greatest extent practicable, that lessees unite with each other in collectively adopting and operating under a cooperative or unit plan of development for operation of such pool, field, or like area, or any part thereof. The Secretary is also authorized and directed to enter into such agreements as are necessary or appropriate for the protection of the United States against drainage.

SEC. 9314. OIL AND GAS INFORMATION.—(a)(1) Any lessee or permittee conducting any exploration for, or development or production of, oil or gas pursuant to this title shall provide the Secretary access to all data and information (including processed, analyzed, and interpreted information) obtained from such activity and shall provide copies of such data and information as the Secretary may request. Such data and information shall be provided in accordance with regulations which the Secretary shall prescribe.

(2) If interpreted information provided pursuant to paragraph (1) of this subsection is provided in good faith by the lessee or permittee, such lessee or permittee shall not be responsible for any consequence of the use or of reliance upon such interpreted information.

(3) Whenever any data or information is provided to the Secretary, pursuant to paragraph (1) of this subsection—

(A) by a lessee or permittee, in the form and manner of processing which is utilized by such lessee or permittee in the normal conduct of business, the Secretary shall pay the reasonable cost of reproducing such data and information;

(B) by a lessee or permittee, in such other form and manner of processing as the Secretary may request, the Secretary shall pay the reasonable cost of processing and reproducing such data and information.

(b) The Secretary shall prescribe regulations to: (1) assure that the confidentiality of privileged or proprietary information received by the Secretary under this section will be maintained; and (2) set forth the time periods and conditions which shall be applicable to the release of such information.

SEC. 9315. REMEDIES AND PENALTIES.—(a) GENERAL.—Except as provided in section 9316 of this title, the district courts of the United States shall have jurisdiction of cases and controversies arising out of, or in connection with, any lease issued under this title. Proceedings may be instituted in the judicial district in which any defendant resides or may be found, or in the judicial district in which the Coastal Plain is located.

(b) ACTIONS FOR RELIEF.—At the request of the Secretary, the Attorney General or a United States Attorney shall institute a civil action in the district court of the United

States for the district in which any defendant resides or may be found, or in the judicial district in which the Coastal Plain is located, for a temporary restraining order, injunction, or other appropriate remedy to enforce any provision of this title, any regulation or order issued under this title, or any term of a lease issued pursuant to this title.

(c) CIVIL PENALTIES.—If any person fails to comply with any provision of this title, or any term of a lease issued pursuant to this title, or any regulation or order issued under this title, after notice of such failure and expiration of any reasonable period allowed for corrective action, such person shall be liable for a civil penalty of not more than $10,000 for each day of the continuance of such failure. The Secretary may assess, collect and compromise any such penalty. No penalty shall be assessed until the person charged with a violation has been given an opportunity for a hearing.

(d) CRIMINAL PENALTIES.—Any person who knowingly and willfully: (1) violates any provision of this title, any term of a lease issued pursuant to this title, or any regulation or order issued under the authority of this title designed to protect health, safety, or the environment or conserve natural resources; (2) makes any false statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this title; (3) falsifies, tampers with, or renders inaccurate any monitoring device or method of record required to be maintained under this title; or (4) reveals any data or information required to be kept confidential by this Act, shall, upon conviction, be punished by a fine of not more than $100,000, or by imprisonment for not more than ten years, or both. Each day that a violation under clause (1) of this subsection continues, or each day that any monitoring device or data recorder remains inoperative or inaccurate because of any activity described in clause (3) of this subsection, shall constitute a separate violation.

(e) Liability of Corporate Officers and Agents for Violations by Corporation.—Whenever a corporation or other entity is subject to prosecution under subsection (d) of this section, any officer or agent of such corporation or entity who knowingly and willfully authorized, ordered, or carried out the proscribed activity shall be subject to the same fines or imprisonment, or both, as provided for under subsection (d) of this section.

(f) Concurrent and Cumulative Nature of Penalties.—The remedies and penalties prescribed in this title shall be concurrent and cumulative and the exercise of one shall not preclude the exercise of the others. Further, the remedies and penalties prescribed in this title shall be in addition to any other remedies and penalties afforded by any other law or regulation.

(g) REMOVAL COSTS AND LIABILITY FOR DAMAGES.—Notwithstanding any other provision of law, if any area of the Coastal Plain or adjacent State waters has been or is being polluted by discharges of oil or hazardous or toxic substances from exploration, development, or production of oil or gas or related activities, conducted by, or on behalf of, a responsible party, and if the pollution has damaged or is damaging fish or wildlife, their habitat, or the environment of the Coastal Plain or adjacent State waters, or if such pollution is causing a substantial threat of damaging those fish or wildlife, their habitat, or the environment of the Coastal Plain or adjacent State waters, the responsible party shall be jointly, severally and strictly liable for the removal costs and damages specified in this subsection that arise directly out of or directly result from pollution that has damaged, or is damaging or is causing a substantial threat of damaging fish or wildlife, their habitat, or the environment of the Coastal Plain or adjacent State waters. The Secretary shall make a determination with respect to such liability after notice to the responsible party and an opportunity for hearing. Upon failure of the responsible party adequately to control and remove the pollutant or threat, the Secretary, in cooperation with other Federal, State, or local agencies, or in cooperation with the responsible party, or both, shall have the right to accomplish the control and removal at the expense of the responsible party. Funds contained in the Coastal Plain Liability and Reclamation Fund, provided for by section 9503 of this title, may be used to accomplish such control and removal until such time as sufficient funds can be recovered from the responsible party. The removal costs and damages referred to in this subsection are the following—

(1) all necessary removal costs as determined by the Secretary;

(2) damages for injury to, destruction of, loss of, and reclamation of natural resources, including the reasonable costs of assessing such injury, destruction, loss or reclamation; and

(3) damages for economic loss resulting from injury to, or destruction of, real or personal property or natural resources, and loss of subsistence use of natural resources by local residents.

SEC. 9316. EXPEDITED JUDICIAL REVIEW.—Any complaint filed seeking judicial review of an action of the Secretary in promulgating any regulation under this title may be filed only in the United States Court of Appeals for the District of Columbia, and such complaint shall be filed within ninety days from the date of such promulgation, or after such date if such complaint is based solely on grounds arising after such ninetieth day, in which case the complaint must be filed within ninety days after the complainant knew or reasonably should have known of the grounds for the complaint. Any complaint seeking judicial review of any other actions of the Secretary under this title may be filed in any appropriate district court of the United States, and such complaint must be filed within ninety days from the date of the action being challenged, or after such date if such complaint is based solely on grounds arising after such ninetieth day, in which case the complaint must be filed within ninety days after the complainant knew or reasonably should have known of the grounds for the complaint.

SEC. 9317. ANNUAL REPORT TO CONGRESS.—On March 1st of each year following the date of enactment of this title, the Secretary shall prepare and submit to the Congress an annual report on the leasing program authorized by this title.

SEC. 9318. INTERESTS OF THE INUPIAT ESKIMO PEOPLE.—(a) The prohibitions and limitations contained in section 1003 of the Alaska National Interest Lands Conservation Act of 1980 (16 U.S.C. 3143) insofar as they have application to lands or interests therein owned by the Inupiat Eskimo people within the Arctic National Wildlife Refuge, but outside the Coastal Plain, are hereby repealed.

(b) The prohibitions and limitations contained in section 1003 of the Alaska National Interest Lands Conservation Act of 1980 (16 U.S.C. 3143) insofar as they have application to lands or interests therein owned by the Inupiat Eskimo people within the Coastal Plain are hereby repealed as of the day after the first lease sale is held pursuant to this title. With respect to the lands and interests therein described in this subsection, no exploratory drilling activities shall be authorized until the day after such lease sale.

(c) The substantive provisions of the final regulations issued pursuant to this title which establish environmental stipulations, terms and conditions for oil and gas leasing on the Coastal Plain shall apply to the exploration and development of all subsurface property interests owned by the Inupiat Eskimo people within the Arctic National Wildlife Refuge; provided that prior to issuance of such regulations, oil and gas exploration and development activities on the land and interests therein described in subsection (a), shall be governed by the stipulations set forth in appendix 2 of the August 9, 1983, agreement between the Arctic Slope Regional Corporation and the United States.

(d) Any claims for money damages or other available relief brought by Arctic Slope Regional Corporation or Kaktovik Inupiat Corporation alleging that the provisions of this title constitute a taking of contract or property rights under the fifth amendment to the Constitution of the United States may be brought within one hundred and twenty days of its enactment. A claim shall be barred unless a complaint is filed within the time specified. Any such complaint shall be filed in a United States district court, and such court shall have exclusive jurisdiction to determine such proceedings in accordance with the procedures hereinafter provided, and no other court of the United States, of any State, territory, or possession of the United States, or of the District of Columbia, shall have jurisdiction of any claim whether in a proceeding instituted prior to or on or after the date of enactment of this title. Any such proceeding shall be assigned for hearing at the earliest possible date, shall take precedence over all other matters pending on the docket of the district court at that time, and shall be expedited in every way by such court. Any review of an interlocutory or final judgment, decree, or order of such district court may be had only upon direct appeal to the Supreme Court of the United States.

Subtitle D—Coastal Plain Environmental Protection

SEC. 9401. (a) NO SIGNIFICANT ADVERSE EFFECT STANDARD TO GOVERN AUTHORIZED COASTAL PLAIN ACTIVITIES.—The Secretary shall administer the provisions of this title through regulations, lease terms, conditions, restrictions, prohibitions, stipulations, and other provisions that ensure the oil and gas exploration, development, and production activities on the Coastal Plain will result in no significant adverse effect on fish and wildlife, their habitat, and the environment, and that shall require the application of the best commercially available technology for oil and gas exploration, development, and production, on all new exploration, development, and production operations, and whenever practicable, on existing operations.

(b) SITE-SPECIFIC ASSESSMENT AND MITIGATION.—The Secretary shall also require, with respect to any proposed drilling and related activities, that—

(1) a site-specific analysis be made of the probable effects, if any, that the drilling or related activities will have on fish and wildlife, their habitat, and the environment;

(2) a mitigation plan be implemented to avoid, minimize and compensate (in that order and to the extent practicable) any significant adverse effect assessed under paragraph (1) of this subsection; and

(3) the development of the mitigation plan shall occur after consultation with the agency or agencies having jurisdiction over matters mitigated by the plan.

SEC. 9402. REGULATIONS TO PROTECT THE COASTAL PLAIN'S FISH AND WILDLIFE RESOURCES, SUBSISTENCE USERS, AND THE ENVIRONMENT.—(a) Prior to implementing the leasing program authorized by subtitle C of this title, the Secretary shall prepare and promulgate regulations, lease terms, conditions, restrictions, prohibitions, stipulations, and other measures designed to ensure that the activities undertaken in the Coastal Plain authorized by this title are conducted in a manner consistent with the purposes and environmental requirements of this title.

(b) The proposed regulations, lease terms, conditions, restrictions, prohibitions, and stipulations for the leasing program authorized by subtitle C of this title shall require compliance with all applicable provisions of Federal and State environmental law and shall also require—

(1) as a minimum, the safety and environmental mitigation measures set forth in items one through twenty-nine (1 through 29) at pages 167 through 169 of the "Final Legislative Environmental Impact Statement" (April 1987) on the Coastal Plain;

(2) seasonal limitations on exploration, development, and related activities, where necessary, to avoid significant adverse effects during periods of concentrated fish and wildlife breeding, denning, nesting, spawning, and migration;

(3) that exploration activities, except for surface geological studies, be limited to the period between approximately November 1 and May 1 and that exploration activities will be supported by ice roads, winter trails with adequate snow cover, ice pads, ice airstrips, and air transport methods: *Provided*, That such exploration activities may be permitted at other times if the

Secretary determines, after affording an opportunity for public comment and review, that special circumstances exist necessitating that exploration activities be conducted at other times of the year and he finds that such exploration will have no significant adverse effect on the fish and wildlife, their habitat, and the environment of the Coastal Plain;

(4) design safety and construction standards for all pipelines and any access and service roads that—

(A) minimize, to the maximum extent possible, adverse effects upon the passage of migratory species such as caribou; and

(B) minimize adverse effects upon the flow of surface water by requiring the use of culverts, bridges, and other structural devices;

(5) prohibitions on public access and use on all pipeline access and service roads;

(6) stringent reclamation and rehabilitation requirements, consistent with the standards set forth in this title, requiring the removal from the Coastal Plain of all oil and gas development and production facilities, structures and equipment upon completion of oil and gas production operations: *Provided,* That the Secretary may exempt from the requirements of this paragraph those facilities, structures or equipment which

the Secretary determines would assist in the management of the Arctic National Wildlife Refuge and which are donated to the United States for that purpose;

(7) appropriate prohibitions or restrictions on access by all modes of transportation;

(8) appropriate prohibitions or restrictions on sand and gravel extraction;

(9) consolidation of facility siting;

(10) appropriate prohibitions or restrictions on use of explosives;

(11) avoidance, to the extent practicable, of springs, streams, and river system; the protection of natural surface drainage patterns, wetlands, and riparian habitats; and the regulation of methods or techniques for developing or transporting adequate supplies of water for exploratory drilling;

(12) avoidance or reduction of air traffic-related disturbance to fish and wildlife;

(13) treatment and disposal of hazardous and toxic wastes, solid wastes, reserve pit fluids, drilling muds and cuttings, and domestic wastewater, in accordance with applicable Federal and State environmental law;

(14) fuel storage and oilspill contingency planning;

(15) research, monitoring, and reporting requirements;

(16) field crew environmental briefings;

(17) avoidance of significant adverse effects upon subsistence hunting, fishing, and trapping by subsistence users;

(18) compliance with applicable air and water quality standards;

(19) appropriate seasonal and safety zone designations around well sites within which subsistence hunting and trapping would be limited;

(20) reasonable stipulations for protection of cultural and archeological resources; and

(21) all other protective environmental stipulations, restrictions, terms, and conditions deemed necessary by the Secretary.

(c) In preparing and promulgating regulations, lease terms, conditions, restrictions, prohibitions, and stipulations under this section, the Secretary shall consider—

(1) the environmental protection standards which governed the initial Coastal Plain seismic exploration program (50 Code of Federal Regulations 37.31–33);

(2) the land use stipulations for exploratory drilling on the KIC–ASRC private lands which are set forth in appendix 2 of the August 9, 1983, agreement

between Arctic Slope Regional Corporation and the United States; and

(3) the operational stipulations for Koniag ANWR Interest lands contained in the draft agreement between Koniag, Incorporated and the United States of America on file with the Secretary on December 1, 1987.

SEC. 9403. SADLEROCHIT SPRING SPECIAL AREA.—(a)(1) The Sadlerochit Spring area, comprising approximately four thousand acres as depicted on the map referenced in section 9102 of this title, is hereby designated to be a special area. Such special area shall be managed so as to protect and preserve the area's unique and diverse character including its fish, wildlife, and subsistence resource values.

(2) Pursuant to subsection (d) of section 9304 of this title, the Secretary may exclude the Sadlerochit Spring Special Area from leasing.

(3) In the event that the Secretary leases the Sadlerochit Spring Special Area, or any part thereof, for purposes of oil and gas exploration, development, production, and related activities, there shall be no surface occupancy of the lands comprising the special area.

(b) The Secretary is authorized to designate other areas of the Coastal Plain as special areas if the Secretary determines that they are of unique character and interest so as to require such special protection. The Secretary shall notify the Committee on Energy and Natural Resources of the United States Senate and the Committee on Interior and Insular Affairs of the United States House of Representatives of the Secretary's intent to designate such areas ninety days in advance of making such designations. Any such areas designated as special areas shall be managed in accordance with the standards set forth in subsection (a) of this section.

SEC. 9404. FACILITY CONSOLIDATION PLANNING.—(a) The Secretary shall, after providing for public notice and comment, prepare and update periodically a plan to govern, guide, and direct the siting and construction of facilities for the exploration, development, production, and transportation of Coastal Plain oil and gas resources. This plan shall have the following objectives:

(1) avoiding unnecessary duplication of facilities and activities;

(2) encouraging consolidation of common facilities and activities;

(3) locating or confining facilities and activities to areas which will minimize impact on fish and wildlife, their habitat, and the environment;

(4) utilizing existing facilities wherever practicable; and

(5) enhancing compatibility between wildlife values and development activities.

(b) The plan prepared under this section shall supplement any comprehensive conservation plan prepared pursuant to the requirements of section 304(g) of the Alaska National Interest Lands Conservation Act of 1980 (94 Stat. 2394).

SEC. 9405. RIGHTS-OF-WAY ACROSS THE COASTAL PLAIN.—Notwithstanding title XI of the Alaska National Interest Lands Conservation Act of 1980 (16 U.S.C. 3161 et seq.), the Secretary is authorized to grant under section 28 of the Mineral Leasing Act (30 U.S.C. 185) rights-of-way and easements across the Coastal Plain for the transportation of oil and gas under such terms and conditions as may be necessary so as not to result in a significant adverse effect on the fish and wildlife, their habitat, and the environment of the Coastal Plain. Such terms and conditions shall include requirements that facilities be sited or modified so as to avoid unnecessary duplication of roads and pipelines. The regulations issued pursuant to this title shall include provisions regarding the granting of rights-of-way across the Coastal Plain.

SEC. 9406. ENVIRONMENTAL STUDIES.—In addition to any other environmental studies required by law, subsequent to exploring or developing of any area or region of the

Coastal Plain, the Secretary shall conduct such additional studies to establish environmental information as he deems necessary, and shall monitor the human, marine, and coastal environments of such area or region in a manner designed to provide information which can be used for comparison with any previously collected data for the purpose of identifying any effects on fish or wildlife and their habitat and any significant changes in the quality and productivity of such environments, for establishing trends in the areas studied and monitored, and for designing experiments to identify the causes of such effects or changes.

SEC. 9407. ENFORCEMENT OF SAFETY AND ENVIRONMENTAL REGULATIONS.—(a) RESPONSIBILITY OF THE SECRETARY.—The Secretary shall diligently enforce all regulations, lease terms, conditions, restrictions, prohibitions, and stipulations promulgated pursuant to this title.

(b) RESPONSIBILITIES OF HOLDERS OF LEASE.—It shall be the responsibility of any holder of a lease under this title to—

(1) maintain all operations within such lease area in compliance with regulations intended to protect persons and property on, and fish and wildlife, their habitat, and the environment of, the Coastal Plain; and

(2) allow prompt access at the site of any operations subject to regulation under this title to any ap-

propriate Federal or State inspector, and to provide such documents and records which are pertinent to occupational or public health, safety, or environmental protection, as may be requested.

(c) ON-SITE INSPECTION OF FACILITIES.—The Secretary shall promulgate regulations to provide for—

(1) scheduled onsite inspection by the Secretary, at least twice a year, of each facility on the Coastal Plain which is subject to any environmental or safety regulation promulgated pursuant to this title or such provisions contained in any lease issued pursuant to this title to assure compliance with such environmental or safety regulations; and

(2) periodic onsite inspection by the Secretary at least once a year without advance notice to the operator of such facility to assure compliance with all environmental or safety regulations.

SEC. 9408. FUNDING FOR ENVIRONMENTAL MONITORING AND ENFORCEMENT.—The Congress authorizes and directs that the Secretary of the Treasury shall make available to the Administrator of the Environmental Protection Agency (Administrator) an amount of $5,000,000, not later than sixty days after the first lease sale pursuant to section 9304 and annually thereafter, until ten years after oil and gas exploration, production and development activities on the

Coastal Plain have ceased. The Administrator shall distribute annually to the State of Alaska not less than 25 per centum of such amount. These moneys shall be used for activities, or in support of activities, within the State of Alaska by the Environmental Protection Agency and the State of Alaska for monitoring compliance with, and enforcing, all Federal environmental laws within their jurisdiction applicable to oil and gas exploration, development and production under this title, and monitoring compliance with, and enforcing, all such laws, with respect to owners, operators, and other persons having business in connection with leases granted pursuant to this title. For purposes of this section, all such Federal environmental laws shall include, but are not limited to, the Clean Air Act (42 U.S.C. 7401–7642), the Solid Waste Disposal Act (42 U.S.C. 6901–6987); the Federal Water Pollution Control Act (33 U.S.C. 1251–1376); the Comprehensive Environmental Response, Compensation, and Liability Act (26 U.S.C. 4611 et. seq. and 42 U.S.C. 9601–9675); and the Safe Drinking Water Act (42 U.S.C. 300f–300j–9). The Administrator and the State of Alaska shall enter into a cooperative agreement to coordinate their responsibilities under this section. The Administrator shall consult with the United States Department of Transportation and the State of Alaska on the appropriate role of the State of Alaska in monitoring and enforcing the Hazardous Materials Transportation Act

(49 App. U.S.C. 1801–1814). The Administrator shall submit annually a report to the Congress on the amount of funds expended and activities carried out pursuant to this section.

Subtitle E—Land Reclamation and Reclamation Liability Fund

SEC. 9501. LAND RECLAMATION.—The holder of a lease or leases on lands within the Coastal Plain shall be fully responsible and liable for the reclamation of lands within the Coastal Plain and any other Federal lands adversely affected in connection with exploration, development, or transportation activities on a lease within the Coastal Plain. The holder of a lease shall also be responsible for conducting any land reclamation required as a result of activities conducted on the lease by any of the leaseholder's subcontractors or agents. The holder of a lease may not delegate or convey, by contract or otherwise, this responsibility and liability to another party without the express written approval of the Secretary.

SEC. 9502. STANDARD TO GOVERN LAND RECLAMATION.—The standard to govern the reclamation of lands required to be reclaimed under this title, following their temporary disturbance or upon the conclusion of their use or prolonged commercial production of oil and gas and related activities, shall be reclamation and restoration to a condition capable of supporting the uses which the lands were capable of supporting prior to any exploration, development, or production activities, or upon application by the lessee, to a higher or better use as approved by the Secretary; except that in the case of roads, drill pads and other gravel foundation structures, reclamation and restoration shall be to a condition as closely approximating the original condition of such lands as is feasible using the best commercially available technology. Reclamation of lands shall be conducted in a manner that will not itself impair or cause significant adverse effects on fish or wildlife, their habitat, or the environment.

SEC. 9503. COASTAL PLAIN LIABILITY AND RECLAMATION FUND.—(a) Within six months of a commercial discovery within the Coastal Plain, the Coastal Plain Liability and Reclamation Fund (the "Reclamation Fund") is hereby directed to be established by the Secretary.

(b) The Secretary shall collect from the owner of any commercially produced crude oil or natural gas liquids from the Coastal Plain at the time and point where such crude oil first enters the trans-Alaska pipeline a fee of 5 cents per barrel. The collection of the fee shall cease when $50,000,000 has been accumulated in the Reclamation Fund, and it shall be resumed at any time that the accumulation of revenue in the Reclamation Fund falls below $45,000,000.

(c) All revenues collected under subsection (b) shall be paid into the Reclamation Fund. The reasonable costs of administration of the Reclamation Fund shall be paid from the revenues in the Reclamation Fund. All sums not needed for administration of the Reclamation Fund or making authorized payments out of the Fund shall be invested prudently by the Secretary in income-producing securities. Income from such securities shall be added to the principal of the Reclamation Fund.

(d) The revenues in the Reclamation Fund shall be available, with the approval of the Secretary, for the following purposes—

(1) to compensate promptly any person or entity, public or private, for any damages caused by oil and gas exploration, development and production activities on or in the vicinity of the Coastal Plain;

(2) to reclaim any area of the Coastal Plain not reclaimed in accordance with the standard set forth in section 9502 of this title, by the operator or the holder of a lease or leases;

(3) up to $15,000,000 annually to reclaim and restore—

(A) any area of the Arctic National Wildlife Refuge or other North Slope Federal lands affected by past and future oil and gas exploration, development, or production; and

(B) North Slope non-Federal lands affected by future exploration, development, or production on the Coastal Plain,

which are not reclaimed and restored in accordance with applicable Federal and State law;

(4) up to $2,000,000 annually to the Director of the Fish and Wildlife Service to monitor and conduct research on fish and wildlife species which utilize the land and water resources of the Coastal Plain; and

(5) to reclaim at the conclusion of the period of exploration, development and production, any area of the Coastal Plain and related lands which have not been properly reclaimed by the operator or lease holder.

(e) The United States shall have legal recourse against any party or entity who is responsible for the reclamation of any area within the Coastal Plain, to recover any funds expended under paragraphs (1), (2), (3) and (5) of this subsection due to a failure by the responsible party to reclaim such area as required by this Act: *Provided*, That such right of recovery shall not be available against any Alaska Natives conducting traditional subsistence use activities. Any funds so recovered shall be deposited in the Reclamation Fund.

(f) Any moneys remaining in the Reclamation Fund fifty years after the period of active oil and gas exploration, development, production and reclamation has been concluded in the Coastal Plain shall be paid into the general fund of the United States Treasury.

Subtitle F—Disposition of Oil and Gas Revenues

SEC. 9601. DISTRIBUTION OF REVENUES.—Notwithstanding any other provision of law, all revenues received from competitive bids, sales, bonuses, royalties, rents, fees, interest charges or other income derived from the leasing of oil and gas resources within the Arctic National Wildlife Refuge, Alaska shall be distributed as follows—

(a) 50 per centum to the State of Alaska; and

(b) 50 per centum to the United States.

SEC. 9602. ENERGY SECURITY FUND.—(a) Revenues distributed to the United States pursuant to subsection 9601(b) shall be deposited into a special account in the Treasury which shall be known as the Energy Security Fund. Revenues may be expended from the Energy Security Fund solely as provided in this section.

(b)(1) Not later than thirty days after the date of enactment of this title, the Secretary of Energy shall initiate a process to identify and prepare a list, in descending order of priority, of energy-related projects or programs to enhance this nation's energy security and reduce dependence on imported oil (hereinafter in this subtitle referred to as "the list"). In preparing the list, the Secretary of Energy shall consult with such governmental or non-governmental entities or individuals as the Secretary deems necessary.

(2) Following notice and comment, the initial list shall be transmitted to the Congress as part of the first budget submitted by the President following the initial deposit of funds in the Energy Security Fund.

(3) Thereafter, annual revisions of the list shall be prepared and transmitted in accordance with paragraph 2.

(c) The list shall consist of specific projects or programs (including an estimate of the costs thereof) identified by the Secretary of Energy relating to: energy efficiency and conservation; energy efficiency in transportation; energy research, development, demonstration, and commercialization; fossil energy, including clean coal technology and oil and gas extraction; electrical energy transmission and generation; advanced nuclear reactor programs pursuant to title XII of this Act; and renewable energy resources, such as solar, geothermal, and hydroelectric power.

(d) In identifying projects or programs for inclusion on the list, the Secretary of Energy shall give special consideration to those which (A) minimize or reduce reliance on imported oil; (B) reduce energy costs to consumers; (C) enhance reliability of energy supplies and national security; (D) foster the commercialization of new energy technologies; (E) increase the efficient use of nonrenewable resources such as coal, natural gas, and oil; (F) have the least potential social costs and adverse impacts on the environment; and (G) enhance the diversification of the Nation's domestic energy supply.

(e) The Secretary of the Treasury shall notify the Congress and the Secretary of Energy on an annual basis as to the amounts available for allocation from the Energy Security Fund.

(f) Unless the list is subsequently modified by law, the Secretary of the Treasury is authorized and directed, without further appropriation, beginning one year after the list is transmitted to the Congress pursuant to paragraph (c)(1), to make funds from the Energy Security Fund directly available to the Secretary of Energy to be used to fund those projects or programs on the list in an amount and in the manner and sequence provided therein.

SEC. 9603. JUDICIAL REVIEW AND NON-SEVERABILITY.—(a) Notwithstanding the provisions of section 9316 of this title, any legal action, including an action for declaratory judgment, to challenge the determination made in section 9601(a) of this title of the State of Alaska's share of oil and gas revenues shall be assigned for hearing and completed at the earliest possible date, shall, to the greatest extent practicable, take precedence over all other matters pending on the docket of the court at that time, and shall be expedited in every way by such court. Any such action shall be brought within ninety days of enactment of this title in an appropriate United States District Court. Such action shall be barred unless a complaint is filed within the time specified. Any review of an interlocutory or final judgment, decree, or order of the United States District Court in such action may be had only upon direct appeal to the Supreme Court of the United States.

(b) Nothing in this section shall be construed to grant causes of action to any person or to waive any defenses which may be available to the United States.

(c) If any action is brought in accordance with subsection (a), no lease sale shall occur under section 9304 of this title until a final nonappealable decision has been issued in any such action.

(d) If the revenue sharing provision of section 9601(a) of this title is held invalid, the remainder of this title shall be void.

Subtitle G—Export Restrictions

SEC. 9701. CRUDE OIL EXPORT RESTRICTIONS.—(a) Notwithstanding any other provision of law, no crude oil produced from lands in the Coastal Plain (except any such crude oil which (1) is exported to an adjacent foreign country to be refined and consumed therein in exchange for the same quantity of crude oil being exported from that country to the

United States; such exchange must result through convenience or increased efficiency of transportation in lower prices for consumers of petroleum products in the United States as described in subsection (b)(1)(B) of this section, (2) is temporarily exported for convenience or increased efficiency of transportation across parts of an adjacent foreign country and reenters the United States, or (3) is transported to Canada, to be consumed therein, in amounts not to exceed an annual average of fifty thousand barrels per day, in addition to exports under paragraphs (1) and (2), except that any ocean transportation of such oil shall be by vessels documented under section 12106 of title 46, United States Code) may be exported from the United States, or any of its territories and possessions, subject to subsection (b) of this section.

(b) Crude oil subject to the prohibition contained in subsection (a) may be exported only if—

(1) the President so recommends to the Congress after making and publishing express findings that exports of such crude oil, including exchanges—

(A) will not diminish the total quantity or quality of petroleum refined within, stored within, or legally committed to be transported to and sold within the United States;

(B) will, within three months following the initiation of such exports or exchanges, result in

(I) acquisition costs to the refiners which purchase the imported crude oil being lower than the acquisition costs such refiners would have to pay for the domestically produced oil in the absence of such an export or exchange, and (II) not less than 75 per centum of such savings in costs being reflected in wholesale and retail prices of products refined from such imported crude oil;

(C) will be made only pursuant to contracts which may be terminated if the crude oil supplies of the United States are interrupted, threatened, or diminished;

(D) are clearly necessary to protect the national interest; and

(E) are in accordance with the provisions of the Export Administration Act of 1979 (50 U.S.C. App. 2401 and following); and

(2) the President includes such findings in his recommendation to the Congress and the Congress, within sixty days after receiving that recommendation, agrees to a joint resolution which approves such exports on the basis of those findings, and which is thereafter enacted into law.

(c) Notwithstanding any other provision of this section or any other provision of law, the President may export oil produced from lands in the Coastal Plain to any country pursuant to a bilateral international oil supply agreement entered into by the United States with such nation before June 25, 1979, or to meet obligations of the United States under the International Energy Program in accordance with voluntary agreements or plans of action under section 252 of the Energy Policy and Conservation Act.

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STATEMENT OF HON. MALCOLM WALLOP, U.S. SENATOR FROM WYOMING

Senator **Wallop**. Thank you, Mr. Chairman.

Let me say again how important to me, and I think to the country and what we seek to do, is this series of hearings which you have held, the purpose with which we have set about trying to achieve a national energy policy or strategy.

I have a statement which I would ask be inserted in the record, which I will not deliver. But let me just echo what I heard you say, the frivolity of the claim that if it will not do 100 percent of our needs, we need not and ought not to do any of it. By that same argument, we would have never tilled a single acre of land because a single acre of land might not have even fed a whole family. By that same argument there is no point in doing any of the conservation efforts because by themselves they will not do 100 percent.

I think it is almost inconceivable that any other country in the world so blessed with riches as this country is, energy riches, technological riches, would deny itself so many of both and place its future in the hands of unstable and unpredictable governments, to place its economic future on a debt line required to serve the immediate needs of the country and the balance of payments, to pace its world role in the environment in the hands of other countries and other players who are not nearly so sensitive as ours and in the process, deny Americans the richest, deny Americans the ability, somehow or another, to realize from those riches the great benefits of the technological expertise that can be brought to bear on new uses and new forms of energy, new uses and new means of conserving it.

I hope that we can get on with this, as you say, with some level of sense.

Thank you again for holding the hearing.

[The prepared statement of Senator Wallop follows:]

Statement by Senator Malcolm Wallop

Senate Committee on Energy and Natural Resources

Hearing on Arctic National Wildlife Refuge

March 12, 1991

Mr. Chairman. The United States is facing the prospect of declining production from our existing oil fields and sharply increased future oil imports.

Opening the 1002 Area of the Arctic National Wildlife Refuge to petroleum exploration and development, under the strict environmental guidelines and safeguards contained in this legislation, is necessary to ensure future domestic petroleum supplies, and to realize the economic benefits of the resources that are thought to be there.

Mr. Chairman, this should not become a debate between Arctic oil development and environmental protection. Production technology has proven that Arctic oil development can be conducted in an environmentally sound manner with minimal impact on fish and wildlife resources of the Coastal Plain.

We do not have to speculate about the impact of oil development in the Arctic. The Senate already pondered this question, and wisely chose to permit the development of Prudhoe Bay which lies immediately to the west of ANWR. The environmental Armageddon, so passionately foretold in that debate, simply did not come to pass.

Perhaps the most irrelevant argument I have heard against exploring for oil in ANWR is that the projected reserves would only provide a few weeks or a few months of our total energy needs. Can you imagine any modern nation succumbing to such a guidepost?

Under that creed, our nation would have never drilled a well, dug a ton of coal, built a pipeline, tamed an atom, engineered a wind turbine, or installed a photovoltaic cell. Why? Because each action, on its own, only makes a minimal contribution.

In fact, by putting this contention on fast forward, one can wonder why we'd bother growing food. After all, it only provides a fraction of our daily needs, and it might disturb wetlands.

In reality, energy conservation, energy efficiency, alternative energy, old production, and new production are all needed components of our energy mix. That's why I support ANWR. The Coastal Plain of ANWR is the single most promising onshore area for the discovery of significant oil reserves in the United States. Experts believe it could be the third largest American oil field ever discovered.

Mr. Chairman, common sense must prevail in this debate. The record to date, I believe it is clear: the environment has been, can be, and will be protected. Oil can be produced without harming the environment. Simply put, environmental protection and development can coexist.

I believe the Senate must take serious actions in order to fulfill our responsibility to the people of the United States to establish energy independence. Providing our nation access to billions of barrels of potential domestic oil, says legions.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Wallop.

Now I ask my colleagues to let us go to the witnesses. Unless somebody feels an irresistible urge to say something, I would like to move on.

Senator Murkowski.

STATEMENT OF HON. FRANK H. MURKOWSKI, U.S. SENATOR FROM ALASKA

Senator MURKOWSKI. I thank the Chair. Mr. Chairman, I would ask unanimous consent that a list of the editorials supporting the opening of ANWR, approximately 121 from 22 States, be submitted as part of this record. Thirteen of the editorials are attached.

The CHAIRMAN. Without objection.

Senator MURKOWSKI. I would also ask that a statement by Dr. H.A. Merklin, who recently was the administrator of Energy Information and who had asked to be a witness, be inserted in the record. However, because of the time restraints, he would like his statement in the record. He has followed the exploration of oil production development in the Arctic slope for the past 15 years. I would ask that his views be entered in the record.

The CHAIRMAN. Without objection.

Senator MURKOWSKI. Mr. Chairman, let me just give you a very short overview. You indicated that we have had a good deal of history associated with energy. I believe, Mr. Chairman, this is the 11th hearing on ANWR that we have had in the last 4 years. So, clearly, this Senate committee is familiar with the subject, I think, as you stated.

The question of opening ANWR is not enough to solve our energy conservation concerns. We are certainly going to have to look to other elements. But I think it is appropriate to recognize, as you put in your legislation, that ANWR is an essential element.

Furthermore, Mr. Chairman, as we look at consumption with regard to energy, I think it is important to point out that U.S. consumption is and continues to be relatively flat. The point that is often overlooked is the increase in Third World growth, which is expected to rise about 155 percent from 1985 to the year 2010.

In 1973, developing countries used 17 percent of the world's commercial energy supply. Today the use is 23 percent and it is expected to increase to 40 percent by the year 2020. Some 600 new cars a day appear on the streets of Singapore, Thailand, and Korea.

Opening ANWR for oil and gas exploration can contribute significantly to the welfare of the entire Nation. But when we talk about ANWR, I think it has to be kept in a perspective that is often lost. And that is the reality that in the State of Alaska there are about 449,000 square miles of national parks, forests, wildlife refuges, other Federal lands of which 38,000 square miles is already designated wilderness.

In fact, if you just consider Alaska's wilderness alone, you have the 11th largest State, taking the place of Utah. I am glad my colleague from Utah is not here to reflect on that. But it is a reality. The Arctic National Wildlife Refuge is 31,000 square miles, about the size of the State of South Carolina.

The 1002 area, at only 2,400 square miles, is about the size of the State of Delaware. On this 2,400 square miles, the total impact that would be created by exploration development would be less than 1 percent of the entire area and would have less impact than 20 miles of utilized area in Virginia which makes up the Dulles International Airport.

In other words, to clarify the analogy, the area impacted within the 1002 area is roughly the same size as the State of Delaware within a refuge of approximately the size of South Carolina. The area that would be impacted by development is an area slightly smaller than that taken up by Dulles International Airport complex, meaning the rest of Delaware and/or South Carolina would remain unchanged.

So what we attempt to do is try and put this is in manageable fences, if you will. I think, Mr. Chairman, that is what the witnesses will attempt to do.

I have an extensive statement, as you have no doubt anticipated, but let me just highlight a couple of other points.

This year's salmon catch in Alaska was the biggest ever at 155 million fish with 46.4 percent, or a little more than a quarter, coming from Prince William Sound. Alaskans are proud of their resource development. Another example is the Trumpeter Swan which many people thought to be extinct in the 1930's. This year there are over 13,000, up from 3,000 in 1968. And we can cite, time and time again, specifics with regard to the ability to maintain high levels of wildlife in areas where there is activity.

I would like to also refer to the caribou. In 1970 there were about 3,000 caribou in the North Slope. Today there are over 18,000. It has been 13 years since production began. You should know, Mr. Chairman, there are 28 herds in Alaska which account for more than 579,000 caribou, that is more than the population of the State of Alaska at 550,000. So, indeed, we have this wildlife that is compatible. It is maintaining itself. In some instances, it is actually increasing.

Finally, Mr. Chairman, several of the witnesses will address an issue of great concern and that is revenue sharing. The reality is that there was a compact made when Alaska became a State under the Statehood Act, as well as the Mineral Leasing Act, that provided for certain considerations for the State because two-thirds of the State area had been withdrawn and put into Federal domain. It was a recognition that the State of Alaska should share in a revenue split different from the other States where there was a reclamation fund established by law.

This testimony will be submitted by other witnesses today. But I think it is appropriate to recognize that this was a binding contract made with the Federal Government and the people of Alaska. If the terms and conditions are going to change by change of law, the people of Alaska have a right to be heard and there is appropriate consideration to be given if that change should occur.

Mr. Chairman, as you know, I render my full support to you and the Ranking Member to develop an ANWR bill. I want to thank you for holding this hearing today. I think that you will find the witnesses are going to contribute substantially to what ultimately will be, in my opinion, approval of ANWR by this committee and an appropriate vote reflecting that.

Thank you, Mr. Chairman.

[The prepared statement of Senator Murkowski and the information referred to follow:]

Statement by Senator Frank H. Murkowski

Senate Committee on Energy and Natural Resources

Hearing on Arctic National Wildlife Refuge

March 12, 1991

Mr. Chairman, it is naive to think that any one initiative will be enough by itself to solve the nation's energy dependence. Opening ANWR is not enough; conservation is not enough; nuclear energy is not enough; no one element of the National Energy Strategy will be sufficient to solve the problem. Certain elements, however, are essential and ANWR is one of them. Each element is important. We must pursue them all.

While there were independent and wholly justifiable reasons for the United States to join with its allies under the United Nations' Resolution to stop the naked aggression of Iraq in the Gulf, let us not forget that the role of the Mideast in world oil supply lent an element of urgency to the need to curtail Iraq. Whether it is strategic and critical materials or basic energy supplies, the failure of the United States to develop its own domestic reserves leaves us open to aggression and threats from abroad. It limits our abilities and renders us and our allies subject to the whims of petty dictators like Saddam Hussein.

As the United States becomes more dependent on foreign oil and more vulnerable to supply disruptions, Americans can expect higher prices, not only for gasoline and heating fuel, but for basic goods such as food and clothing. They can also expect yet another slip in the ability of U.S. products to compete with imports.

This is compounded by the fact that although U.S. consumption is relatively flat, oil use in the third world is expected to rise 155% from 1985 to 2010. In 1973, developing countries used 17% of the world commercial energy supply. Today, they use 23%, and are projected to use 40% by the year 2020.

Opening ANWR for oil and gas exploration in an environmentally sensitive manner can contribute significantly to the welfare of the entire nation by reducing these undesirable trends. The United States must not overlook this enormous resource as it searches for ways to resolve our energy problems.

When we talk about the resources of ANWR, I believe it would be most helpful if we can put ANWR into some kind of perspective. In the State of Alaska, there are 449,000 square miles of national parks, forests, wildlife refuges, and other federal public lands, of which 38,200 square miles is already designated wilderness (excluding wilderness in National Parks). In fact, if you just considered Alaska's wilderness areas alone, you would have America's 11th largest state, taking the place of Utah.

The Arctic National Wildlife Refuge, at 31,134 square miles, is approximately the same size as the state of South Carolina. The 1002 Area, at only 2,422 square miles, is approximately the same size as the State of Delaware. Of this 2,422 square miles, the total impact that would be created by exploration and development would be less than one percent of the entire area (.007 of the Refuge), and would have less impact than the 20 square miles taken up by the Dulles Airport Complex. I would like to clarify that analogy -- the area impacted within the 1002 area is roughly the same size as the State of Delaware, within a refuge the approximate size of South Carolina. The area that would be impacted by development is an area slightly smaller than that taken up by the Dulles Airport complex, meaning the rest of Delaware and/or South Carolina would remain unchanged, in exactly the same condition as it is today. There will be no impact on the vast majority of the area, and using that analogy, minimal impact on the area of Dulles.

In the ten hearings that this Committee has held on issues related to ANWR, numerous accusations have been made about the havoc that development would visit on this important resource area. To my knowledge, every single issue has been either strongly refuted or can be mitigated to the extent that the resource and wildlife habitat will be relatively undisturbed. We have learned much from our experience at Prudhoe Bay, the nation's largest oil field, producing 24% of our domestic production. The existing structures, roads, pipelines and the infrastructure of Prudhoe Bay currently occupy about 6.53 square miles. With the advancement of technology and new ways to drill, if we were starting to develop in Prudhoe Bay today, the entire complex would only impact about 2.38 square miles. That is slightly over 1/3 of the present impact.

The assertions by many that exploration and development will cause serious harm to the environment does not stand up to objective scrutiny -- if they were accurate, it would follow that Prudhoe Bay, Kuparuk and other North Slope oil fields should be biological wastelands. This is simply not the case. Fish and wildlife populations continue to feed, reproduce and rear their young throughout areas of oil field development on the North Slope. After more than ten years of fish and wildlife studies, there is simply no evidence that oil field activities have produced any measurable reduction in the population size of any fish or wildlife species using the North Slope.

After all, otters and waterfowl are still playing in the waters of Prince William Sound. This year's salmon catch in Alaska was the biggest ever at 155 million fish, with 46.6 million fish caught in Prince William Sound; and next year it is projected that there will be another all-time record harvest for the State of 164.3 million salmon. Apparently, Mother Nature either hasn't read or doesn't believe the special interest propaganda.

Alaskans are proud of their resources and environmental record. An example is the Trumpeter Swan, which is making a dramatic comeback in Alaska. According to the Fish and Wildlife Service, in the mid-1930s, fewer than 70 were thought to exist in the United States, and a recent aerial census turned up more than 13,000 in Alaska, up from the 3,000 counted in 1968.

Back in the '60s, the Alaska salmon runs were in serious danger in many areas because of poor federal management prior to Alaska Statehood. It was state management, establishing sound management practices for the first time and with the active participation of people who voluntarily conserved during those lean years, which caused the runs to return to today's record level.

Let me speak to the issue of caribou for one moment. Dr. Tom Bergerud, one of the world's preeminent caribou authorities, states that the Barren Ground caribou variety of the species is probably doing better today than it has ever done in the past. The only things that bother caribou are bugs and predators. He further states that man has historically only had an affect on the caribou in his role as predator. His artifacts, buildings, towns, oil fields have had little or no effect on their reproductive success. There were 3,000 caribou near the North Slope field in the early '70s; we have over 18,000 today. And it has been more than 13 years since production began in 1977. In addition, I think you should know there is actually a total of 28 herds in Alaska, which account for more than 579,000 caribou. That is more than one caribou for every person living in Alaska today (530,000). Apparently, the caribou also haven't read the special interest propaganda.

On the issue of wetlands and the damage that doomsayers have misrepresented, Alaska contains 265,625 square miles of wetlands, constituting over 2/3 of our state and almost double the total acreage of wetlands present in the contiguous 48 states. Wetlands throughout most of Alaska's vast arctic and sub-arctic regions, including the entire North Slope, are fundamentally different from the freshwater marshes and tidelands with which most Americans are familiar. The wetlands of Northern Alaska are underlain by permafrost -- permanently frozen ground that makes it impossible for these lands to provide most of the functions for which wetlands in the contiguous 48 and Hawaii are valued. Nevertheless, the oil industry in Alaska has been working for years in cooperation with government agencies to mitigate wetlands loss. Ways have been found to minimize the area required for new facilities, to avoid important habitats, and to help rehabilitate disturbed lands.

ANWR and its mineral resources are vital to the stable economy of the United States. They are also vital to the funding mechanisms in the Johnston/Wallop National Energy Strategy legislation, as well as the Administration's National Energy Strategy legislation and budget. This is not a free environmental vote any longer. In fact, it never was. "No war for oil" is nice to say, as long as you are rich and not elderly and living on Social Security when the winter winds blow. If the wildlife and natural resources are protected, there is no reason whatsoever why Americans should deny themselves access to their heritage of natural resources wealth.

I also object to those who climb on their special interest bandwagon and accuse those of us who support opening ANWR as seeking to despoil the environment. Those of us from Alaska know what a precious resource we have. We have mountains that put the lower 48 to shame. We have rivers which flow wild and free, and air you can breathe but not see. We have forests larger than most states and wildlife which is wild and not behind cages. I don't see many suggestions of reintroducing bison and wolves in the East, and the debate on the Clean Air Act made it pretty clear when we can expect to see Class I standards along the Eastern Seaboard. When an amendment was offered to set those visibility standards for National Parks -- the same standards that Alaska on the whole already enjoys without any help from the federal government -- did everyone notice the rush to make certain that Gateway National Recreation Area, Shenandoah National Park, Buffalo River, and the Chattahoochee River were included? No, let's not reclaim the devastation of past generations, but sit around with white wine and brie and congratulate ourselves for doing nothing. Let's send out fundraising propaganda so that the Director of the National Wildlife Federation can make more than the President, while firing those who might eat into his expense account. Let's send troops off to war and let the elderly and poor freeze in the dark, so we can grandstand and make the special interests love us. Heaven forbid the Sierra Club might not send us a calendar.

While I am happy to see the ANWR proposal as part of the Energy package, I wish I could say I was completely overjoyed; however, I am not. There are two issues in the bill which cause me and my constituents grave concern.

Under the Mineral Leasing Act, of all revenues paid into the Treasury from oil and gas development on public lands outside Alaska, 50% is paid to the State where the leased land is located, 40% is paid into the reclamation fund, and 10% remains in the general treasury.

Under the Mineral Leasing Act and the Alaska Statehood Act, of all revenues paid into the Treasury from oil and gas development on public lands within Alaska, 90% of revenue is paid to the State of Alaska and 10% remains in the general treasury.

Yet the Administration's legislation and budget are based upon the figure that 100% of the revenues will go to the Federal government. I find the Office of Management and Budget's blatant disregard for the terms of Alaska's Statehood compact simply outrageous.

The legislative history of the Alaska Statehood Act reveals that Congress deliberately mandated this revenue distribution formula for two reasons:

> First, when Alaska was admitted to the Union, over 99% of the land area of Alaska was owned by the Federal Government. Further, more than one-fourth of the land in Alaska, 95 million acres, was withdrawn from mineral leasing. Congress determined that this tremendous acreage withdrew the more valuable resources needed by the new State to develop and support itself and its people.
>
> Second, Alaska was not covered by and received no benefits from the Reclamation Act of 1902. Taking Reclamation Act payments into account, other western states received benefits from 90% of Mineral Leasing Act revenues.

Both policy reasons underlying the statehood grant to Alaska of 90% of the Mineral Leasing Act revenues from Federal lands still exist today. To make matters worse, after statehood, but before Alaska could complete its statehood land selections, ANILCA added 104 million acres, or 162,500 square miles, of new withdrawals to the Federal lands in Alaska, further limiting valuable natural resources available for development. In addition, Alaska has no need for and still receives none of the benefits under the Reclamation Act that the other western states receive.

We view the Alaska Statehood Act as a binding contract which was entered into knowingly and voluntarily by the people of Alaska and by the Federal government. Alaskans voted overwhelmingly in a referendum election to ratify the Statehood Act. A presidential proclamation followed which admitted Alaska into the Union. This contract should only be altered by the consent of both parties. Legislation proposed to unilaterally change the Statehood contract is unjust, and I will not support it.

Not only do these proposals unilaterally reduce Alaska's Statehood revenue entitlement, but S. 341 goes further to impose the so-called "Blackmail Clause." This provides that any action to challenge in court the proposed 50/50 distribution of revenues between the State of Alaska and the federal government will suspend leasing authority. If the revenue provision is held invalid, the leasing authority for ANWR is rescinded. My view on this has not changed since we last reported ANWR from this committee in 1989. The concept of "if you win, you lose" flies in the face of basic democratic principle. It's the right of the State to defend its Statehood compact in court, and for the

Congress to mandate such a heavy-handed policy is just plain wrong and unacceptable to this Senator. I view it as crass discrimination, and intend to put a stop to it. It also is foolish if we are serious about the development of our domestic reserves and a serious energy policy. Because if the Alaska Statehood Act prevails in court, the nation's energy policy loses. The reason for developing ANWR is not to enrich federal coffers, but to provide needed domestic energy supplies.

Mr. Chairman, I am eager to work with you to produce the best ANWR legislation possible, one that is environmentally secure, one that will let us explore and develop our resources for the benefit of all Americans, and particularly to the establishment of a National Energy Strategy. I have heard Senators speak in the past to the issue of ANWR, who have stated they did not want to develop the North Slope until we establish a National Energy policy. Now we have the makings of one, and those Senators are now saying, "I wanted a national energy policy, but this should not be a part of it." Hopefully, we will be able to do what our constituents have asked us to do -- and that is to make tough decisions and take better care of America. This National Energy Strategy is certainly a step in that direction. ANWR is the keystone to the NES legislation, and funds much of the conservation measures.

Mr. Chairman, I want to render my full support to you and the Ranking Republic Member, Senator Wallop, and trust that you will be mindful of my concerns. Thank you.

The following is a listing of editorial opinion on ANWR in newspapers, magazines and other publications compiled during 1988, 1989, 1990 and 1991. Pro indicates support for oil and natural gas exploration and development of the coastal plain of the Arctic National Wildlife Refuge in Alaska; neutral means comment on the issue without taking a position. This list is current as of January 31, 1991.

ALABAMA
Alabama Journal (Montgomery)
Birmingham Post Herald
Birmingham News
Memphis Commercial Appeal
Mobile Register
Montgomery Advertiser

ALASKA
Anchorage Daily News
Anchorage Times
Fairbanks News Miner
Juneau Empire
Kenai Peninsula Clarion

ARIZONA
Green Valley News (neutral)

ARKANSAS
Fort Smith Southwest Times

CALIFORNIA
Advance Register
Los Angeles Daily News
Oakland Tribune
Sacramento Bee
Sacramento Union
San Diego Union
San Francisco Examiner
San Gabriel Valley Daily News
Ukiah Daily Journal
Whittier Daily News
COLORADO

Denver Post
Grand Junction Daily Sentinel
Rocky Mountain News

CONNECTICUT
Manchester Journal Inquirer
Waterbury Republican

DELAWARE
Delaware State News (Dover)

DISTRICT OF COLUMBIA
Washington Post
Washington Times

FLORIDA
Florida Times Union
Tampa Tribune

IDAHO
Burley South Idaho Press
Nampa-Caldwell Press Tribune

ILLINOIS
Chicago Tribune
Jacksonville Journal Courier
Robinson Daily News
Taylorville Breeze Courier

INDIANA
Bloomington Herald-Telephone
Bloomington Herald-Times (neutral)
Elkhart Turth
Evansville Courier
Indianapolis News
LaPorte Herald Argus (neutral)
Vincennes Sun-Commercial

IOWA
Des Moines Register

KANSAS
Lawrence Journal-World

MAINE
Kennebec Journal (neutral)

MARYLAND
Baltimore Sun
Hagerstown Herald-Mail

MASSACHUSETTS
Quincy Patriot Ledger

MICHIGAN
Detroit News
Lansing State Journal
Monroe Evening News (neutral)
St. Joseph Herald
Traverse City Record Eagle

MINNESOTA
Minneapolis Star Tribune

MISSOURI
Jefferson City Capital News

NEBRASKA
Alliance Times-Herald
Columbus Telegram
Omaha World Herald

NEW HAMPSHIRE
Claremont Eagle Times
Broadcaster (Nashua)

NEW JERSEY
Newark Star Ledger (neutral)
New Brunswick Home News

NEW MEXICO

Albuquerque Journal

NEW YORK
Buffalo News
Jamestown Post Journal
The Journal of Commerce
The New York Times
The Wall Street Journal

NORTH CAROLINA
Tabor City Tribune

OHIO
Cincinnati Enquirer
Cincinnati Post
Cleveland Plain Dealer
Columbus Dispatch
Coshocton Tribune
Elyria Chronicle Telegram
Marion Star (neutral)
New Philadelphia Times
Toledo Blade

OKLAHOMA
Bartlesville Examiner
Miami News Record
Daily Oklahoman
Tulsa World

OREGON
Astoria Daily
Eugene Register Guard
Portland Oregonian (pro to neutral)

PENNSYLVANIA
Delaware County Times (Chester)
Hazelton Standard Speaker
Honesdale Independent (Wayne)
Kittanning Leader Times
Meadville Tribune

Milton Evening Standard
New Castle News (neutral)
Pittsburgh Post-Gazette
Reading Eagle
Scranton Times (neutral)
Williamsport Sun-Gazette

SOUTH CAROLINA
Columbia State
Greenville News

SOUTH DAKOTA
Sioux Falls Argus Leader

TENNESSEE
Chattanooga News-Free Press
Knoxville News Sentinel
Lenoir City News Herald (neutral)
Memphis Commercial Appeal
Nashville Banner

TEXAS
Dallas Morning News
Houston Chronicle
Houston Post
Tyler Morning Telegraph

UTAH
Salt Lake City Deseret News
Salt Lake Tribune (neutral)

VIRGINIA
Richmond News Leader
Richmond Times Dispatch

WASHINGTON
Bellingham Herald
Mount Vernon Skagit Valley Herald
Seattle Times (leaning pro)

WEST VIRGINIA
Elkins Inter-Mountain
Huntington Herald Dispatch
Wheeling Intelligencer

WISCONSIN
Milwaukee Sentinel

WYOMING
Cheyenne Eagle

OTHERS
Barron's
Forbes
Fortune
Human Events
National Petroleum News
Nation's Business
Oil Daily
Oil and Gas Journal
Offshore Magazine
Topics Magazine
USA Today

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WEDNESDAY, JANUARY 9, 1991

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REVIEW & OUTLOOK

Oil and Caribou Can Mix

There is an easy way to separate reasonable environmentalists from ecological extremists. Ask them if they believe in opening up a small strip of land on Alaska's remote northeast coast to oil exploration and drilling. The issue may well set off the most contentious debate of the year in Congress.

The 20-by-100-mile coastal plain of the Arctic National Wildlife Refuge is basically a frozen desert, wind-swept and bleak even in summer. There are no trees, few flowers, and a lot of mosses and lichens. Yet this area may well conceal the last major oil reservoir in North America, one that could rival the nearby Prudhoe Bay discovery that now produces 25% of the nation's domestic oil. The Interior Department puts the chances of a major find at one in five as against the oil industry's typical success rate of one in 50.

Some 92% of the Maine-sized ANWR area is already off-limits to development. The rest was specifically set aside by Congress in 1980 for possible oil exploration. But this hasn't stopped environmental groups from trying to slap a wilderness label on even this small remainder. The area is used by migrating caribou and other wildlife.

Alaska officials and local Eskimo leaders almost unanimously back development of the coastal strip. They say the Prudhoe Bay field shows that a balance can be struck between the needs of environmental protection and economic growth. In the 12 years since drilling began there, the local caribou herd has tripled in size to 18,000 animals. The 800-mile-long Alaska pipeline has had a superb safety record.

Nor would oil exploration and production disturb much of ANWR. With Prudhoe Bay as a guide, the best estimates are that less than 23 square miles—0.1% of ANWR's total area—would be affected by drilling pads, roads and other facilities. All would be removed carefully and the ground reseeded once exploration or drilling was completed.

Bills that would have allowed exploration in ANWR's coastal plain were passed by both House and Senate committees in 1989. Then the Exxon Valdez disaster wiped ANWR off the legislative map. The Gulf crisis has brought the issue front and center again. Last August, the Senate passed an amendment that would open up ANWR and other non-wilderness federal lands to oil and gas development if oil imports rise above 50% of domestic demand. They are now 45%.

But development of ANWR makes sense regardless of how much oil America imports, and Congress will take up the issue in earnest early this year. The Beltway environmental groups are fighting to keep all of it in perpetual cold storage. A Wilderness Society official says there is a "need to protect the land not just for wildlife and human recreation, but just to have it there."

That is environmental overreaching. It ignores the needs of real Americans, many with low incomes, who have to drive to work every day to support their families and will probably never have the means or the desire to fly 800 miles north of Anchorage, Alaska, and appreciate the stark, wind-swept terrain of ANWR.

Sensible conservationists believe that opening up a small sliver of Alaska's tundra for oil exploration simply recognizes that the welfare of human beings should also be a factor in environmental policy.

RICHMOND (VA) NEWS LEADER, JANUARY 4, 1991

Tap Alaska's Oil

Iraq's invasion of Kuwait aroused the U.S. out of a foreign-policy slumber. With any luck, it also will awaken the nation to certain domestic realities. Energy defines the issue. Oil remains the key.

Saddam's mischief served as a cruel reminder of America's dangerous dependence on foreign oil. Events far from the corner service station can expose consumers to higher prices and uncertain supplies. Persian Gulf tensions likely pushed a stumbling economy into a recession. It need not have happened. The situation need not grow worse.

Although the U.S. imports more than 50 per cent of i[illegible] it boasts significant untapped [illegible]es. It is doubtful that the U.S. can produce enough to eliminate the need for all imported oil — but every barrel produced at home means one fewer purchased abroad [illegible] most promising domestic oil [illegible] offshore and in Alaska. Let us talk here of the Arctic.

Almost two decades ago, oil pumped from Prudhoe Bay began flowing through the Alaskan pipeline. Before the drilling began, environmentalists predicted doom. They cited the probable destruction of the caribou herd as one consequence. Catastrophe did not come. The caribou population has tripled. Prudhoe Bay has been an energy, economi[illegible]nd environmen[illegible] success.

The focus of debate has shifted to the Arctic National Wildlife Range (ANWR), specifically the Coastal Plain. Alaskans would like to explore for oil there. Once again, the scaremongers say No. And once again they are wrong.

ANWR comprises 19 million acres. Now, in raw terms, that sounds like a huge area — as large as a small country, in fact. The Coastal Plain, which defines the land under consideration for development, contains only 1.5 million acres. Of those acres, only 12,000 would be directly affected. Please note that Alaska itself covers 375 million acres. Twelve thousand acres of 375 million represent only a speck.

It is a rich speck, however. The estimated petroleum potential of the Coastal Plain ranges from 4.8 billion to 29.5 billion barrels. If the experience of Prudhoe Bay is any indication, then the figure promises to be higher rather than lower.

Perhaps someday the industrial world will rely on an energy source other than petroleum. Technologies yet undreamed of eventually will make the internal combustion engine obsolete. For the foreseeable future, though, oil will remain the most valuable natural resource. There is no good reason for the U.S. to let such a potentially profitable oil field as the Coastal Plain go untapped.

Iraq's mi[illegible] tests American will. National will [illegible]res more than sending tro[illegible] distant shores. It also means [illegible] the difficult but necessary p[illegible] decisions to develop America's natural resources. Alaska's oil fields must be opened. There is a way. Is there the will?

OIL & GAS JOURNAL, DECEMBER 24, 1990

Adamant on ANWR

Patrick Crow

It's an open secret in Washington the National Energy Strategy (NES) very likely will propose leasing and exploration on the Coastal Plain of the Arctic National Wildlife Refuge.

ANWR, just east of Prudhoe Bay field, appears to be the nation's last best hope for a billion barrel oil field. Naturally, industry wants to drill it.

President Bush supports ANWR leasing, as do the Departments of Energy and Interior. He is expected to sign off on the NES early in 1991.

Environmental warning

Last week, 16 environmental groups warned at a Washington press conference they never will accept ANWR exploration as part of an energy strategy.

They said NES should stress conservation, with the goal of reducing U.S. oil dependence 20% by 2000 "using least cost strategies that do not compromise environmental protection or infringe upon sensitive ecosystems like ANWR."

Gaylord Nelson of the Wilderness Society said, "We fully expect the president will use the Persian Gulf confrontation as an excuse to call for exploration and development of some of the rarest, most fragile of our nation's vanishing wildlands. At the top of the list will be ANWR.

"Now, the president certainly will say that drilling in the refuge will somehow make the U.S. more 'secure.' The fact is that the U.S., which holds only 4% of the world's oil reserves, always will be subject to world price swings and disruptions of oil supplies—unless, of course, we follow a national energy strategy that reduces our dependence on all oil, not just imported oil."

Brooks Yeager of the National Audubon Society said there is no possible compromise on ANWR.

"If the president's energy strategy is built on the wish lists of the energy industries, on subsidies for production of fossil fuels, on despoilation of wildernesses and wildlife refuges, or on resuscitation of the dying U.S. nuclear industry, it will not work, and it will be dead on arrival.

"A policy based on the security of the oil industry is not the same as a policy to make the American economy less dependent on oil."

Jay Hair, National Wildlife Federation president, said, "It is the height of folly to think we can increase our energy security by ravaging the pristine beauty of the arctic refuge or the Outer Continental Shelf or the host of environmentally fragile areas in the northern Rockies likely to be targeted for drilling.

"Exploiting these resources will extend, not end, our oil dependence. And so long as we rely on oil to fuel our transportation needs, we will be eternally dependent on unstable foreign supply sources."

Another backdown?

You may recall that, in the face of intractable environmental opposition, Bush backed down and postponed a number of controversial offshore lease sales.

The green groups clearly want to pressure the "environmental president" into a repeat performance.

And even if Bush stands firm, they have an excellent chance when the NES goes to Congress. Lawmakers have been loath to allow ANWR leasing in the past.

ANWR leasing probably won't be the only politically charged proposal in the NES. But it could be the first to go.

CHICAGO TRIBUNE, SEPTEMBER 27, 1990

An energy plan for the long haul

The threat of war in the Middle East has pushed oil prices to their highest level in a decade. Saddam Hussein's aggression also has lowered the flash points of motorists, environmentalists and policymakers. Everyone, it seems, suddenly is preoccupied with what to do about America's addiction to foreign oil.

The Bush administration reacted initially to the Persian Gulf crisis by announcing some "short-term" steps to raise domestic energy output and encourage conservation. Its national energy strategy, which was being developed even before Iraqi tanks rolled into Kuwait, won't be unveiled until early next year.

Meantime, President Bush has vowed that "Americans must never again enter any crisis—economic or military—with an excessive dependence on foreign oil." Environmentalists contend that means greater conservation, more mass transit and tougher regulations to force Detroit to build smaller, more fuel-efficient cars. Energy companies urge that they be turned loose to find and produce new domestic supplies.

In reality, America never will be able to do without some foreign oil. But there are steps we should take to use energy more wisely and to reduce imports, especially from volatile regions like the Middle East.

While countries like Japan have worked hard to insulate themselves from oil shocks, the United States has become more vulnerable. Americans still rely on petroleum to fuel the economy, with oil accounting for 43 percent of total energy consumption last year. Domestic production has fallen sharply in recent years, however, and imports now account for a record half of all the oil the nation uses. By the year 2000, the import figure could be 60 to 75 percent.

What can the government do to influence oil's supply and demand? After Bush's stubborn refusal to alter his summer vacation plans or beach his gas-guzzling speedboat, it shouldn't be surprising that the administration is concentrating more on boosting supply than forcing people to change their lifestyles to conserve. That upsets environmentalists, but it's not a bad strategy for Washington to resist interfering with market forces that are driving up energy prices; those higher prices will themselves encourage conservation.

Higher oil prices also will boost domestic production, but the government can do more to increase output of oil and natural gas. It should encourage greater recovery of oil left behind in existing wells. And it also should allow greater access by oil companies to areas that show promise of significant reserves, including a very limited portion of Alaska's huge Arctic National Wildlife Refuge and tracts off the coasts of Florida, California and North Carolina.

The White House rightly opposed legislation to boost auto fuel-economy standards, which would force Detroit to retool to build smaller cars that many Americans will reject as unsafe. The administration can, however, promote conservation (and highway safety as well) by persuading Congress to reinstate the 55 mile-an-hour speed limit and urging states to enforce the law. The private sector can help, too, if factories switch from boilers to natural gas whenever feasible, and if more companies experiment with natural gas to run delivery trucks and fleet vehicles.

Increased production and conservation won't make America energy-independent. But an intelligent combination of both, carried out in an environmentally sound manner, can stop the decline in domestic oil output, lessen our dependence on Middle East oil and help carry us to the day when other fuels will play a greater role in driving the nation.

RICHMOND (VA) TIMES-DISPATCH, SEPTEMBER 12, 1990

The Mideast Alternative

This year's salmon catch in Alaska will be the biggest ever. Otters and waterfowl are playing in waters of Alaska's Prince William Sound. Up on the the state's North Slope, on the Arctic Ocean, the caribou are thriving.

Is all of this major news? It should be, for by now, according to the predictions of pessimists, both the sound and the slope should be ecological disaster areas, practically devoid of animal life.

Gloomy environmentalists who opposed construction of the Trans-Alaskan pipeline 13 years ago adamantly argued that the project, designed to take oil from the North Slope to the port of Valdez, would ruin the caribou's habitat. But in fact the caribou population has increased, rising in the Prudhoe Bay area alone from about 3,000 animals in 1972 to about 16,000 animals today. When the Exxon tanker Valdez gushed oil into the sound last year, the pessimists gushed dirges about the spill's disastrous effects. But the beaches, being cleaned both by Exxon crews and by nature's storms, are rapidly recovering. This year's record salmon catch shows that the fish, some of which were hatched in waters affected by the spill, obviously suffered less than the pessimists had predicted from the oil that fouled the sound.

This is not to suggest that environmental concerns are irrelevant to the production of oil. But these encouraging reports from Alaska do show that such concerns can be wildly exaggerated. Given the attitudes and technological capabilities of most oil companies today, their operations pose a far less serious threat to the environment than their most vociferous critics maintain.

The critics' current target is the oil industry's proposal to tap petroleum reserves in Alaska's Arctic National Wildlife Refuge, a forbidding tundra of 19 million acres. Oil companies are seeking permission to drill exploratory wells in only one fragment of the refuge, the 1.6 million acre coastal plain. Experts say this is one of the richest undeveloped fields now available to the United States as an alternative to petroleum from the troubled Middle East.

The refuge is a bleak and barren wilderness, a frozen desert actually, that is inhabited only by a few hundred Eskimos, caribou, musk oxen and a few bears. The coastal plain itself is not a protected wilderness area, but oil companies could not operate there without federal approval. Environmentalists oppose drilling on grounds that it would imperil the caribou and other wildlife and possibly damage the tundra itself seriously. As usual, they cite the danger of oil spills.

These objections the oil industry rebuts with evidence from the North Slope and Prince William Sound. Using highly sophisticated equipment and techniques, oil companies are producing petroleum in the North Slope without greatly disturbing nature. Since operations began there 13 years ago there have been no discernible adverse effects from the pipeline, the wells or all the roads that serve the production community on the caribou, waterfowl or other wildlife. Prince William Sound's steady recovery from the Valdez spill shows that such disasters do not necessarily inflict lasting damage.

Oil companies insist, too, that they want to operate in an environmentally safe manner. They should. It is bad and costly business to do otherwise, as Exxon is learning from its $2 billion task of mopping up after the Valdez.

Despite the oil industry's best efforts, damaging accidents could occur. But there are risks in everything. You do not cease essential economic activity merely because now and then something goes tragically awry. No one seriously suggests banning air travel because airliners sometimes crash and kill all of their passengers, and it would make no more sense to stop the production of oil — an essential commodity — merely because of an occasional pipeline leak or tanker spill.

Given the United States' urgent need to ease its heavy dependence on oil from the Middle East, which is likely to be threatened forever by such disruptions as Iraq's rampage against its neighbors, Congress and President Bush should not hesitate to authorize drilling in the coastal plain. Let it be done with careful respect for environmental considerations, but let it be done.

SOUTHWEST TIMES (Fort Smith, AR), SEPTEMBER 1, 1990

Crisis hits hard at home

George Bush shouldn't let the crisis in the Persian Gulf distract him from the economy at home, which may be deeply affected by the duration and intensity of the standoff. If he can handle the domestic consequences with the same skill he's shown in foreign affairs, he can minimize any damage.

The world oil market is unique among markets, almost all of which respond speedily to changes in prices: adjusting supply and demand, as the situation warrants. Not so the oil market. Prices may sky-rocket, but demand remains constant — entire industries and millions of individuals' behavior are built upon an unvarying degree of consumption. Much time is required to change the industrial infrastructure or to modify behavior, the only sure means of reducing demand.

Likewise supply. In other commodities a price hike is a signal to increase production; but in oil, a price hike must be sustained for months or years to convince suppliers to expend the capital necessary for increased production.

Thus it is extraordinarily difficult for the oil market to regain equilibrium after a price shock. The embargo of Iraq and Kuwait has drained 4.5 million barrels from the world's daily production of oil. Friendly oil producers promise to increase production by 3 million as compensation. Analysts foresee a net loss in the world's oil supply of only 2.5 percent.

But that may be enough. The disastrous oil embargo of 1973-74, which almost crippled the U.S. economy, caused a loss of only 2.75 percent.

Oil shortages like those of the '70s are unlikely, since the domestic market is now unregulated, and shortages are a byproduct of regulated prices. But deregulation also means the price of oil may eventually go very high, with inflationary effects rippling throughout the already weak American economy.

What can Bush do? First, reverse his reversal of his no-tax pledge. Make clear that higher taxes will not burden American taxpayers or businesses. Second, pursue a cut in the capital gains tax, to encourage and reward investment and enterprise. Third, open more domestic land — Alaska's Arctic National Wildlife Refuge, for example — to oil development, adding resiliency to the oil market.

These are strong steps. George Bush has shown himself a master of the bold move internationally. Now's the time to make some here at home.

DAILY CAPITAL NEWS (Jefferson City, MO), AUGUST 31, 1990

The crisis hits home

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COMMERCIAL APPEAL (Memphis, TN), AUGUST 29, 1990

Ways to ease oil crunch

THE Department of Energy has pointed out several steps that Americans could take to offset a substantial portion of oil imports lost because of the embargo on Iraq and Kuwait crude.

Inflating automobile tires to correct pressure could improve mileage and save 100,000 barrels a day. Half of American vehicles have underinflated tires.

Observing posted speed limits would save 50,000 barrels a day. Although the government won't return to the 55-mile-per-hour limit on interstate highways, voluntarily cutting back to that standard would save even more oil. Twenty percent more car-pooling would save 90,000 barrels a day.

If 20 percent of two-car families consistently drove the car that got higher gas mileage, they'd save 40,000 barrels a day.

Those steps alone would make up for 280,000 barrels of the approximately 700,000 a day that had been coming from Kuwait and Iraq.

Several moves could be taken to increase domestic production of oil. The government should allow exploratory drilling in a section of Alaska's Arctic National Wildlife Refuge, believed to be the most promising oil reserve in the United States.

The White House and Congress also should reconsider policies that have put almost all coastal waters off limits to drilling.

A California dispute has kept a consortium of companies led by Chevron from pumping oil from a field off Santa Barbara. For more than two years, three completed platforms have sat idle because of an argument over how to get the crude ashore. Environmentalists demand construction of an expensive pipeline; Chevron wants to transport oil by tanker.

A potential 75,000 barrels a day is not being pumped from the three Chevron wells because California has allowed environmental groups to dictate policy on an issue that affects the entire country.

THE DAILY OKLAHOMAN, FRIDAY, AUGUST 17, 1990

Achieving Energy Independence

AMERICANS don't have to be dependent on foreign oil. In fact, says the U.S. Energy Department, the nation could make up for most of the oil imports lost by Iraq's invasion of Kuwait by year's end.

Energy Secretary James Watkins says U.S. dependence could be reduced by as much as 550,000 barrels a day through a combination of conservation measures and increased domestic oil production.

The question is whether there is a national will to achieve energy independence. It's one thing to urge more car-pooling and proper pressure in automobile tires, but motorists aren't inclined to do less driving.

More gasoline would be available, of course, if the energy industry didn't have to contend with such obstacles as the Point Arguello project. A rich oil field off the coast of California, which has been sitting idle for 2¼ years, could immediately produce 90,000 barrels per day, according to industry sources. But companies can't get their oil to refineries because of disagreement over the best method of delivery.

It is encouraging that the energy department has decided to mediate the dispute. An even more hopeful development would be an alteration of the administration's decision to block new offshore drilling in certain high-potential areas.

That, along with opening part of the Arctic Wildlife Refuge to exploration, would go a long way toward weaning the United States away from foreign oil.

THE OIL DAILY, AUGUST 17, 1990

Crisis Can Teach a Lesson

DURING his primary election campaign for the presidency of the United States of America, there was a debate over whether, as president, George Bush would respond resolutely to a crisis that challenged his ability to make difficult or controversial decisions. The current crisis in the Middle East gives the first clear evidence that he not only will make the difficult decisions himself but has an ability to rally other nations behind his clarion call. We commend him.

When Saddam Hassein's Iraqi forces consumed Kuwait in the worst blitzkreig since World War II, the United States could have simply postured. Instead, President Bush told the press they should "watch and learn" how the United States would react to its worst political crisis since Vietnam, and then set out to take firm and decisive action to bring the appropriate end to this tragic incident.

Under U.S. leadership, the United Nations Security Council adopted a resolution that brought a global quarantine of Iraq, denying the aggressor nation a market for its oil, revenue for its war machine and perhaps an element of sustenance for its people until Iraq agrees to withdraw its forces from Kuwait.

Next the United States responded to a request by the Kingdom of Saudi Arabia to send a defensive expeditionary force to the kingdom. Its aim was quite clear: to make it clear to Saddam that an attack on his neighbor would involve a response from the United States and other nations.

Next the Arab nations, acting at the initiative of Egyptian President Hosni Mubarek, voted their own resolution for Iraq to withdraw from Kuwait. It was an amazing show of unity. Only outlaw Libya and the Pallestine Liberation Organization voted against the resolve of the Arabic nations.

Thus, within a matter of days virtually the entire world had agreed to treat Saddam as a pariah and an outlaw not qualified to do commerce with other nations. And, for the first time since the days of the Iron Curtain, the United States and the USSR were able to act in relative concert without fear that one would seek to gain a political or economic advantage over the other during a period of crisis. It was an unusual political atmosphere — and one that is to be welcomed and appreciated.

What now?

The United States is more vulnerable now to an oil emergency than it was during the crisis days of the Arab oil boycott of the early 1970s or the Iranian revolution of the late 1970s, but it appears unlikely that we will see the gasoline lines of those days. Why? Because in large part those lines were caused by a government allocation system that distributed gasoline based on a relatively unreliable historic criteria rather than the law of supply and demand. There is no such system in place today and there appears to be little, if any, political desire to restore it, or to renew the threat of gasoline rationing.

Clearly, the 570 million barrels of crude oil contained in the U.S. Strategic Petroleum Reserve started under the Carter administration is acting as at least a psychological overhang against panic buying in the United States. If a crisis begins to have a supply-side impact, the U.S. government can begin to release those reserves.

But the United States also has during the Bush administration

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THE OIL DAILY, AUGUST 17, 1990

allowed itself to become a hostage of sorts to an environmental movement that has misplaced its own priorities. There is absolutely no evidence that offshore drilling injures the environment, yet the administration has allowed itself to take the initiative for denying the oil industry the right to drill in the offshore areas of the Atlantic and Pacific coastlines, whether promising or not.

The current crisis should serve to underscore the need to reverse that decision. There also is no rational reason why the public land contained on the coastal plain of the Arctic National Wildlife Refuge in Alaska cannot be explored for its oil resources, believed to be significant. There may be 7 billion barrels of crude oil — or more — readily accessible under those lands and there is no rational environmental reason not to exploit them.

There is no benefit to the current crisis in the Middle East. It has already exacted a price in human lives. It could cost more, perhaps some of them U.S. soldiers, and those are unacceptable costs to pay for the expansionary wishes of one man.

The Bush administration, however, should and, hopefully, will make it clear to the American people that this crisis emphasizes the dangers of energy vulnerability in a volatile world, and work with Congress to take such steps as it can to soften the effect of future crises.

WHEELING (WV) INTELLIGENCER, AUGUST 15, 1990

We Could Use It

While American servicemen continue to pour into Saudi Arabia by the thousands to protect the oil fields upon which the West's economy depend, on the homefront billions of barrels of potential oil reserves are off limits to exploration and drilling.

For example, the Alaskan Wildlife Refuge, where all exploration is forbidden, is believed to hold an estimated 3.2 billion barrels of oil, and offshore areas in the Pacific Ocean may contain another 4.4 billion barrels. The sources, if tapped, could increase U.S. domestic oil reserves by 25 percent.

But thanks to a tangle of environmental laws and a recent presidential order barring exploration on much of the outer continental shelf, these vast reserves are off limits.

The worst case of all may be an oil field 50 miles off the California coast near Santa Barbara. Chevron and Texaco have been prevented from operating an existing drilling platform that would pump an estimated 100,000 barrels a day. The state of California refuses to let the companies build a pipeline to carry the oil to shore, which would be the safest way to transport it.

The Bush administration is at least giving lip service to those who favor carefully administered exploration. But that is all the administration is doing. No action has been taken to loosen the chokehold on America's own oil supplies.

What has paralyzed the administration is the formidable and well-funded environmental lobby. The political climate in Washington these days is such that no action failing to garner the approval of inside-the-Beltway enviromaniacs cannot be carried out, at least not by an administration bent on preserving high popularity ratings.

President Bush is absolutely right in sending American forces to confront Iraq's Saddam Hussein. Still, there is something very wrong with a nation that would put American fighting men at risk to protect foreign oil while forbidding exploration that might lessen U.S. dependence on oil imports. Environmentalism should not take precedence over national security.

USA TODAY, Tuesday, August 14, 1990, Page 8A

Conserve energy to ease oil crisis

How much blood, sweat, and tears will we shed for oil?

Our young paratroopers, pilots and sailors face spilling their blood in the Persian Gulf and Saudi Arabia to protect our supplies of foreign oil.

That's because we now depend on foreign suppliers for 49.9% of our 16-million-barrel-a-day oil habit. We imported only 32% of our needs in 1983. And 65% of the world's oil is in the unstable Middle East. Only 4% is here.

To increase that, oil drillers are sweating at rigs to pump more domestic crude — 14 new rigs are up this week in Texas, six in California, three in Louisiana and Pennsylvania. The 992 rigs in operation today are 130 more than a year ago, but far below the 4,500 running in 1981.

As you can read elsewhere on this page, some people say new oil production even in sensitive environmental areas is needed to protect our economy from Mideast oil shocks.

Others would close the Alaskan Wildlife Refuge and waters off the shores of Florida and California to any type of exploration for oil.

They're both wrong.

We're running out of oil too fast not to seek new supplies. And domestic sources are safer than foreign ones. So some exploration, under strict environmental regulation, must be allowed.

But gushers in the land of the caribou or beneath the waves where dolphins play can't supply enough oil to keep us forever free of foreign threats. Not at our present use.

And rushing in there now could leave us crying later for wasting our finite oil resources while spoiling natural preserves for food and recreation. It would do nothing to halt the oil's pollution of our air and water.

Those need protection, too. And that means our first weapon in the energy war must be conservation.

The 290,000 barrels of oil a day that a new Alaskan oil field could produce are minuscule compared with the 2.9 million barrels of oil a day that could be saved if our cars averaged 40 miles per gallon, as one lawmaker proposes.

The USA could save 300,000 barrels of oil a day by driving at a safer 55 mph than the 65 mph limit in many states. It could save 1.5 million barrels a day in three years if we cut energy use at the same pace we did from 1976 to 1986.

And if the USA were as energy conscious as Japan or Europe, we wouldn't need imported oil. They treat oil as a finite commodity. Japan this week put an 82-degree limit on air conditioning and a 50 mph speed limit for drivers.

We should follow our competitors' example.

Cheap imported oil has spoiled us. It has kept us from developing renewable energy, such as wind, solar and geothermal. It has lulled us into buying bigger cars, so that auto mileage has dropped 4% in recent years after reaching 28 mpg in 1986. It has encouraged a dangerous dependence on an unstable part of the world.

More than overzealous oil production, penalties for inefficient oil use and incentives for conservation and renewable energy would promote a cleaner environment.

And they would cut our debilitating dependence on unsafe and unpredictable energy supplies.

Our blood, sweat and tears are more precious than oil.

BARRON'S, AUGUST 13, 1990

Saddam's Secret Weapon

Environmental Extremists Have Played Into His Hands

ON JUNE 26, 1990, just six weeks before ordering, as commander-in-chief of the U.S. armed forces, American troops into Saudi Arabia, President George Bush issued the following statement from the White House on what's known as the outer continental shelf. "Today, I am announcing my support for a moratorium on oil and gas leasing and development in Sale Area 116, Part II, off the coast of Florida, Sale Area 91 off the coast of northern California, Sale Area 119 off the coast of central California, and the vast majority of Sale Area 95 off the coast of southern California, until after the year 2000.

"The combined effect of these decisions is that the coast of southwest Florida and more than 99 percent of the California coast will be off limits to oil and gas leasing and development until after the year 2000. . . .

"I am also cancelling Lease Sale 96, in the Georges Bank area of the North Atlantic, and directing that no leasing and development activity take place in this area until after the year 2000. This will allow time for additional studies to determine the resource potential of the area and address environmental and scientific concerns. . . ."

* * *

Alas, time and tide wait for no man, not even the President of the United States. Since the Iraqi army 10 days ago moved to seize Kuwait, thereby triggering the latest crisis in the Middle East, one irony after another has been writ large.

For openers, a number of leading Congressional military critics, who 24 hours earlier were doing their best to find fresh ways to slash this country's defense budget, overnight changed from doves into born-again hawks. Presumably to the discomfiture of New York City's Mayor David N. Dinkins, and like-minded foes of a naval Homeport based on Staten Island, the aircraft carrier—target of their obstructionist tactics—has suddenly turned from a sitting duck into a highly mobile, and equally lethal, strike force, one uniquely capable of exerting U.S. power half a world away.

And we have all been treated to the grotesque spectacle of elected representatives of the American people, who over the years have done so much to worsen this country's dependence on foreign crude, raising a hue and cry (in some cases, for the umpteenth time) against the oil companies.

Viewing the charade, one doesn't know whether to laugh or cry; on this score, much will depend on what happens in the Persian Gulf over the coming days, weeks and months. Here and now what's clear is that along with the U.S. political and military posture in the Middle East, quite a few domestic policies strike us as long overdue for agonizing reappraisal.

In particular, it's past time to stop truckling—and knuckling under—to the environmental extremists among us. Owing largely to their influence in high places (as well as to a short-lived bout of weakness in petroleum prices), since the mid-'Eighties the U.S. has grown to depend more and more on foreign oil, notably from OPEC (Organization of Petroleum Exporting Countries).

For this sorry state of affairs, the environmental movement, both in and outside of government, plainly must bear the brunt of the blame. On the latter count, among the worst offenders we rank the media, which over the years, time and again, have played patsy for every pseudo-scientific and phony photo opportunity in the book and given outsize coverage to the rare ecological mishap that inevitably—and unfortunately—tends to accompany economic growth. Whether in peace or war, the world—as grown-ups scarcely should need reminding—is a dangerous place.

That leaves officialdom, which, as usual, happens to be the real villain of the piece. The guilty parties call themselves Republicans and Democrats, and may be found at every level of government: federal, state and local. They comprise, of course, the heads of state of New York and Massachusetts, as well as the public servants and flunkies who do their bidding. They also include quite a few members of Congress, representatives and senators alike, who have come as close as humanly possible to making solon a four-letter word. To judge by the ill-advised and equally ill-timed White House statement cited above, they have even penetrated the Oval Office.

Just weigh what these naysayers have

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BARRON'S, AUGUST 13, 1990

achieved. Working with compliant public service commissions, they have succeeded in delaying, or even dismantling, many nuclear power plants and compelling their replacement by hydrocarbon-fueled substitutes. (Even as U.S. and Iraqi forces began to square off in Saudi Arabia, the state of Massachusetts, on one pretext or another, again brought suit to shut down Seabrook.) At high cost to refineries, expansion of which they have by and large successfully prevented, not to mention greater consumption of crude, they have mandated more and more stringent automotive emission standards.

Perhaps worst of all, by their stubborn refusal to compromise, they have blocked this country from exploiting the few remaining rich potential sources of oil and gas, such as the Arctic National Wildlife Refuge and the outer continental shelf. Years ago *Barron's* denounced this unholy alliance as OPEC's best friend. Today—doubtless unwittingly—it willy-nilly ranks as Saddam Hussein's not-so-secret weapon.

A few facts and figures underscore the point. In a report issued in mid-July, the American Petroleum Institute disclosed that in January-June of 1990, U.S. dependence on imports of crude accounted for almost half of the nation's total oil supply. Previous high mark for a six-month span, by the way, occurred (at 48.8%) in the first half of 1977, during that painful decade's recurrent oil crunches and crises.

In the first six months of this year, contrariwise, domestic output of crude fell by more than 5%, to the lowest point in nearly three decades. OPEC, so API went on to warn, "is now producing at over 80% of current capacity, a level that in the past has frequently been associated with substantial price increases by the cartel."

On this score, the U.S. has only itself to blame. For with fine bipartisanship, Republicans and Democrats alike have either acquiesced in, or actively connived at, ecological extremism. Even under Ronald Reagan, the Environmental Protection Agency, against the weight of scientific evidence, was allowed to accelerate the phase-out of lead in gasoline, an unwarranted and unwise move that put heavy pressure on refineries and led to the shipment to these shores of hundreds of thousands of barrels per day of otherwise unnecessary foreign petroleum and products.

Under George Bush, so-called environmental President, EPA's excesses, notably in the realm of tailpipe emissions, have gone from bad to worse. As *Barron's* has noted before, the agency, for example, has decreed stringent new rules and regulations aimed at curbing the evaporation rate (volatility) of gasoline, a problem largely of its own making, and a process that has further stepped up—by an estimated 150,000 barrels per day—the need for imported crude.

EPA is also dragging its feet on approval of a manganese-based gasoline additive called HiTec 3000, produced by Ethyl Corp. (and distributed widely in Canada for more than the past 10 years) that would ease the pressure on strained U.S. refineries and make possible at least a modest drop in the need for foreign oil.

On another front, so an API spokesman told the Senate Energy Committee last week, EPA's failure over the past two years to grant a permit at an offshore platform near Port Arguello, Calif., has left an estimated 80,000 barrels of oil per day untapped.

Far greater and more effective measures lie within the purview of Congress and the White House. At the present time, the outer continental shelf supplies the U.S. with 10% of its domestic oil and nearly one-fourth of its natural gas. What's more, according to a fact sheet released by the White House late in June, when President Bush invoked his misguided 10-year moratorium on offshore drilling, such areas today encompass roughly 10% (2.6 billion barrels) of all proven U.S. oil and gas reserves and 25% of estimated reserves. All restraints on offshore exploration and development, it so happens, must bow to the needs of national security.

In the official jargon: "If the President determines that national security requires development in this area of these three lease sales or, in other areas, he has the ability to direct the Interior Department to open the areas for development." For God's sake, let's get that oil and gas—95% of which, by the way, reaches the mainland not by lighter or tanker but by pipeline—off the shelf.

* * *

Let's also get cracking on exploring and developing the Arctic National Wildlife Refuge (ANWR), a step which Congress, several times in the past decade, has come close to approving. Along with offshore, ANWR, as Ted Stevens, Republican Senator from Alaska, courageously told his colleagues 10 days ago, offers the best hope of lessening dependence on OPEC crude.

Said Stevens: "There are 12 sedimentary basins in my state of Alaska. Only two are in production now. All the rest are blocked from access. ... We have proven reserves now of about seven billion barrels. We have estimated reserves—and these are very conservative estimates—of 15 billion barrels [roughly equivalent to the gusher at Prudhoe Bay]. ...

"If we authorized the exploration of ANWR this year, we would see oil exploration starting in 1991, and assuming a discovery, we could have actual oil from the ANWR area into the oil pipeline by 1994." Better Arctic and offshore oil than American blood, and better late than never.

—Robert M. Bleiberg

HOUSTON (TX) POST, AUGUST 12, 1990

AN OIL HOSTAGE AGAIN

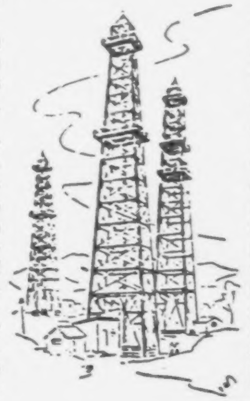
The price for U.S. dependence on foreign energy

IT ISN'T ENERGY DEJA VU — it's worse. Once again the United States finds itself facing energy shortages because the country has become too dependent on foreign petroleum sources. A full-blown war in the Mideast could be economically disastrous for the United States.

What would a severe crimp in our daily fix of foreign oil mean to ordinary people? A lot. Let's start with the basics — food, clothing and shelter.

Food prices would certainly rise. Tractors fueled by petroleum plow the land. Petroleum-based chemicals promote crop growth and protect crops from pests. Petroleum-powered vehicles bring food to the cities, and to the supermarkets, where people buy it and drive home with it.

Much of the clothing we wear is petroleum-based. Its transportation, too, depends on adequate supplies of crude. So does transportation of building materials for homes and businesses. Some of those are petroleum-based — from the composition shingles on the roof to protective coatings for foundations and petroleum-based chemicals to treat wooden foundations members. Heating and cooling our homes is dependent largely on petroleum.



Long lines at service stations were the most visible effect of the Arab oil embargo. If more serious shortages occur over a long period, the early 1990s could make those lines and price increases of the late 1970s look like minor inconveniences.

Under the best of circumstances, petroleum prices are going to rise. That is mixed news for Houston, which, despite diversification, still has a big stake in the oil patch. The best often doesn't happen. Already Texas rice farmers have lost a substantial part of their export market in Iraq (and the port of Houston has lost traffic to and from that country and Kuwait) and fuel prices have risen substantially. That drives up all transportation costs, from operating the family car and the trucks on our highways to airline tickets.

Even the ships that bring our oil from often-unstable and sometimes-hostile foreign countries are petroleum-powered. Those ships constitute a far greater environmental threat than offshore drilling. Remember the Mega Borg.

The United States now imports more than half of its petroleum — more than before the Arab oil embargo of 1979. Iraq and Kuwait account for only about 9 percent of U.S. imports. But a broader conflict obviously could have more devastating effects. Severe and lengthy disruption of imports could bring rationing first, then more drastic consequences, affecting where and how we live.

What can be done? In the short term we can encourage other countries with surplus capacity to help make up the shortfall. But that doesn't address the real problem. A big reason for U.S. dependency on foreign energy sources is short-sightedness and political spinelessness in Washington. The events of the 1970s should have resulted in a sane, thoughtful and fair energy policy. They didn't. The harsh lessons were first largely ignored (although there were a few positive results, notably deregulation of natural gas) and then apparently forgotten in the relative stability of the 1980s. The United States is in many ways worse off energy-wise now than it was before the Arab oil embargo of the 1970s.

To begin to fix the problem, the percentage depletion allowance should be restored. Sensitive areas, the Arctic National Wildlife Refuge and the waters off the Florida and California coasts, should — with appropriate environmental safeguards — be opened for drilling. Instead of returning to our old, wasteful ways, we should encourage greater energy efficiency in our vehicles, homes and industrial plants. In the longer term, we must develop alternative energy sources that are both cleaner and will reduce our dependency on foreign oil.

In the meantime, more oil is to be found in the 50 states and off the nation's coasts. It is in the nation's interest that remaining barriers to oil and natural gas exploration and development be removed while still being mindful of safety and protecting the environment.

Those willing to take the considerable risks involved should be entitled to the prospect of fair rewards. Given that opportunity, they can help ensure the nation's energy supply against threats posed by the current and future crises.

ANWR PRODUCTION

Prepared for a Hearing before the Senate Energy Committee

March 11, 1991

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Mr. Chairman, Members of the Committee,

I am Dr. H. A. Merklein, and I am here to address some statistical issues concerning the treatment of environmental damage on the Arctic Slope, including the Coastal Strip of the Arctic National Wildlife Refuge. As I am sure most of the Committee Members know from many earlier appearances, I was until recently the Administrator of the Energy Information Administration (EIA). I am here today as a concerned and informed citizen, and as such I am not representing any particular company or institution.

Much of my work in these last six years dealt with the Arctic National Wildlife Refuge (ANWR). In particular, EIA made an independent assessment of the most likely commercially recoverable reserves to be found at ANWR, and we came up with an estimate that has since entered the realm of conventional wisdom, especially after the Office of Technology Assessment reviewed EIA's work and found it acceptable. It was a rare and gratifying occurrence in my professional life as a Government Official.

Before going into the environmental aspects of oil production on the North Slope, permit me a brief remark about the importance of the ANWR contribution to U.S. energy security. It has been said that, even if EIA's most likely reserve estimate of 3.5 billion barrels turns out to be correct, this represents only about 200 days' worth of U.S. oil consumption, so why expose the Arctic Slope to environmental risks for such a small ultimate benefit? The answer is that the ultimately recoverable amount of oil is not a relevant variable, since the oil will not be produced at once. It is the annual rate of production and its contribution to the overall production mix that matters here.

In the case of the Prudhoe Bay Field where a similar argument has been made (except that the resource represents about 600 days of consumption), the Field's contribution nevertheless represents 25% of the current U.S. oil production rate. Put differently, U.S. crude oil and lease condensate production which has declined from its 1970 high of 9.6 million barrels per day (mmbpd) to its current level of 7.3 mmbpd including Prudhoe Bay production, would now be down to 5.5 mmbpd without Prudhoe Bay and our net imports would be on the order of 53% of consumption, instead of the current rate of 42%.

It is the production rate, how large it is and how long it can be sustained, rather than the reserve volume that counts in gaging the importance of a new discovery, and especially of a giant discovery. At an estimated recoverable reserve of 3.5 billion barrels, ANWR will be capable of producing half a million barrels per day for more than 10 years, and that is decidedly not an insignificant contribution to U.S. energy security.

When we did the ANWR reserve study at EIA, we first familiarized ourselves with the existing body of work, including the Department of the Interior Report entitled Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment, published in April of 1987. While our work supported Interior's estimate of 3.2 billion barrels as the most likely volume of recoverable reserves, we could not help but note some of the statistical shortcomings in the treatment of its wildlife issues. We refrained at the time from bringing this out in testimony or elsewhere, since EIA did not have a specific environmental mandate; injecting ourselves into this debate would have opened the Administrator to the charge of politicizing EIA and, contrary to the vociferous opinion of some, we did not want to be, nor did we want to appear to be, a contributor to political Washingtonian sentiments. Now that I no longer need to concern myself with an institutional image, I am prepared to bring out some of the statistical flaws in the referenced Interior study and in other writings on environmental problems in the Arctic.

There is a distinct possibility, some would call it an opportunity, to color perfectly sound statistical results by the choice of descriptive terms. For example, at EIA we avoided the use of the word "subsidy", since that term generally carries a negative connotation. Instead, we would talk in the more neutral terms of price or cost "differentials". This kind of judicious use of language has not always been the rule in environmental studies. In the referenced DOI study, there is the celebrated discussion of how caribou cows tended to concentrate in certain areas of the ANWR Coastal Plain. Those areas where, over an observation period of 15 years, calving was concentrated about half the time were given the intensely emotional term "core calving areas". Yet, the same data could have been used with equal statistical validity to point out that about half the time these areas were not particularly important to the calving process. This slant would have suggested, with equal statistical validity, that there is enormous flexibility and very little locational dependence as regards the herd's choice of calving grounds.

We are dealing here with the syndrome of half a glass of beer; the glass is statistically half full or half empty, a brief moment in a consumer's life that may instill joy or regret, depending on his or her perspective, even though to the statistician the location of the liquid level in the glass conveys no feeling. By reporting the glass as half full, the statistician has made a value judgment and passed it on to the unsuspecting audience, as has the environmentalist when he uses the term "core calving area".

The DOI Coastal Plain Report is full of such value judgments, some of them outright misleading. For example, on page XVIII, i.e., opposite the very first page of the report is a full-page photograph of migrating caribou in an awe-inspiring mountain setting. The problem is, there are no mountains in the Coastal Plain of ANWR. The picture was evidently taken in the Brooks Range to the South which is a designated wilderness area and, therefore, permanently off limits to all development, including oil exploration and production. The oil-bearing Coastal Plain itself is a desolate area as anyone who has been there knows. But most people have not been there, so their judgment is shaped by somebody else's reports or pictures.

Nor have the media done a credible job in adequately depicting the 1002 Area. We have all seen the anchor man of a major television network doing a documentary on oil production on the Arctic Slope who showed Arctic Village, its splendid setting and its threatened way of life. But Arctic Village is located on the other side (Southern Flank) of the Brooks Range, more than 130 miles from the coast line as the crow flies (which, by Washington standards, would place it on the other side of Philadelphia), and approximately 90 miles from the Southern border of the 1002 Area under consideration.

The drilling for and production of crude oil at ANWR, if approved, would not be a truly pioneering effort. The production history of nearby Prudhoe Bay (60 miles) permits reasonable expectations concerning the environmental impact of similar operations at ANWR. The one thing that strikes a visitor at Prudhoe Bay is the stark discrepancy between the ecological disaster he has been lead to believe he would find, and the actual cleanliness of the oil operations. Whatever hidden impact there may be on wildlife and habitat, it is clear on the face of it that the Prudhoe Bay production operations are being conducted with considerable care. Hardly a visitor escapes the feeling that there must be a disconnect between what is reported about and what is at Prudhoe Bay.

One of the primary problems concerning these environmental discrepancies rests with the regulation itself. The regulatory emphasis is on habitat preservation, a carry-over from non-arctic wildlife preservation where habitat destruction is indeed a significant cause of the disappearance or displacement of wildlife. However, there is convincing evidence that habitat destruction is not a force acting as a constraint on Arctic wildlife. There is simply more area available in the vast Arctic than there are animals to fill it. This is why the regulatory process would be well served to distinguish between Arctic and non-arctic enforcement criteria.

This preoccupation with habitat preservation is the dominant train of thought in a recent Fish and Wildlife Draft Report entitled Comparison of Actual and Predicted Impacts of the Trans-Alaska Pipeline System and Prudhoe Bay Oilfields on the North Slope of Alaska. The report, which has been disavowed by the Regional Director of Fish and Wildlife, entered the public domain through a premature leak to the public. Among other things, the report claims that direct and secondary habitat losses in the Prudhoe Bay oil fields and the Alyeska pipeline corridor resulted in a total estimated "loss or displacement" of 22,500 birds. However, there is no statistical evidence that the bird population has actually experienced a decline. In the contrary, all measurements seem to indicate that bird populations in the Prudhoe Bay area have either risen or remained stable. The localized displacement of birds through the construction of roads or production facilities in the Prudhoe Bay area, therefore, cannot have been a limiting factor in the bird population. Whatever it is that limits population (winter habitat?, migratory risks?), it is not a lack of breeding space in the Arctic. And if it is not, then the regulatory focus on habitat is misplaced, if survival of a thriving bird population is the ultimate objective.

Unless it can be shown that there is a statistically significant correlation between habitat and Arctic wildlife population, the regulatory preoccupation with habitat losses is incompatible with the objective of wildlife preservation. This point has been made by others, and it is reflected in the Administration's legislative agenda that envisions a renewed effort of focusing on wildlife populations while deemphasizing the retention of habitat for its own sake.

The destruction of habitat certainly has not been a deleterious force on the survival of caribou. The Central Arctic Herd that predominantly spends the summer months at or around Prudhoe Bay has quintupled in size since production operations began. In fact, the caribou, who have the right of way on Prudhoe Bay roadways and seem to know it, seek out gravel roads or pads, probably for insect relief. The animals are only moderately disturbed by the presence of people: they permit them to approach to within a few feet before they turn to lope off in an unhurried gait. Caribou have been known to hold up air traffic at Prudhoe Bay by managing to get onto the runways, in the midst of all the hustle and bustle that comes with normal small-airport traffic.

The argument has been made that the quintupling of the Central Arctic Herd, the predominant Prudhoe Bay herd, cannot be extrapolated to the Porcupine Herd that tends to migrate to the ANWR Coastal Plain in the summer, since the calving densities are significantly higher for the Porcupine Herd. This observation invokes the idea in the observer's mind that, at higher calving densities, the calving area must be somehow more valuable to the animals and, if true, habitat destruction at ANWR becomes more deleterious than it is at Prudhoe Bay. That is at best a tenuous supposition; no statistical evidence exists to support such a claim and, indeed, if the "core calving" habitat at ANWR is so indispensable to the caribou, the question arises why they avoid these areas altogether every other summer.

The collection and treatment of statistical data regarding oil spills is also highly misleading. Until 1989, when Federal spill reporting requirements were changed, all spills regardless of size, had to be reported. Thus the record shows that there were fewer than 120 oil spills along the Alyeska pipeline (not including the Valdez terminal) over the period June 1977 to August 1989. Most of these spills, and all significant spills, took place in the early stage of pipeline operations. A similar record exists with respect to Alyeska's terminal and tanker loading operations.

In all these years, only seven pipeline spills exceeded 50 barrels, and the largest by far (16,000 barrels) was the result of an act of sabotage. The really impressive point, though, is the fact that no spill of 25 barrels or more occurred in the last 8 or so years, and only two spills exceeding 10 barrels (11 and 24 barrels) occurred during that period of time. Considering that this record reflects a pipeline corridor 800 miles long, it is safe to state that there has been no adverse effect on wildlife due to oil spills and that the pipeline is being run in an environmentally responsible manner.

The same reporting requirements at the Prudhoe Bay oil field have created the impression that considerable damage to wildlife was brought on by oil spills, even though, as mentioned, no statistically credible evidence has been developed to support the claim that wildlife has actually been threatened or reduced. This may be a good place to insert an anecdotal note on oil spills at Prudhoe Bay, where I once observed an oil drum that fell from a pickup truck onto the roadway. Luckily, the drum which contained kerosine did not burst open, but it did land on its side with the result that perhaps a spoonful of kerosene that had been entrapped on top of the drum by its rim spilled onto the road. The spill was so small that it could not be seen, but by rubbing a finger on the spill area and smelling, the presence of kerosene could be detected. That required the filling out of a form to report a spill, which subsequently made its way into the oil spill data bank as another documented instance of environmental neglect. The truck, by the way, bore U.S. Government license plates.

There is one area where sizeable oil spills did occur at Prudhoe Bay, and that is at Dead Horse, where oil field contractors had set up operations on land leased to them from the State. The area was a visible and probably an environmental disgrace, and the oil companies were largely blamed for this occurrence. Yet the fact is that this was the one area where the oil companies had lost control over operations. They ultimately reassumed control, and clean-up operations are well on the way. The learning experience was enough to make sure that the oil companies would never again permit operations in the Arctic, including ANWR, where they would not retain environmental control.

Much of the environmental literature is unnecessarily strident and subjective, and many claims are not verifiable since they do not come from traceable sources. "Private correspondence" is not a good source for scientific verification, especially if the correspondents are advocates in addition to being scientists. There are two very credible sources that I have encountered in assessing environmental issues on the North Slope. They are the Standard Alaska Production Company Comments On U.S. Fish And Wildlife Service Draft Report that should be read in conjunction with the referenced FWS Draft Report, and a study by the Corps of Engineers (that is, the regulators themselves) entitled A Review Of Physical And Biological Effects Of Beaufort Sea Causeways. Both of these reports are serious scientific endeavors that contrast sharply with much that is written by advocates-scientists. To quote one memorable phrase from the Army Corps of Engineers Study: "It is only in somewhat exceptional circumstances that the available information to determine compliance with the guidelines is so technically and scientifically rigorous as to meet with universal acceptance. Rather, the usual circumstance on the part of the decision-maker is subjective and employs best professional judgment. That is clearly allowed by regulations but it is extremely important in the documentation of the evaluation that it be so identified and not cloaked in an aura of science."

In summary, the potential contribution of oil production from the Arctic National Wildlife Refuge is not likely to be insignificant; if current reserve estimates are born out by actual discoveries, ANWR can be expected to produce half a million barrels of oil a day for at least ten years. In addition, it is safe to say that 14 years of production operations in neighboring

Prudhoe Bay have provided valuable experience to the oil industry in dealing with the fragile ecological environment of the North Slope. In view of this experience, a new look at both environmental regulation and compliance may well be warranted. Given the emerging recognition that, unlike in more moderate climates, habitat is not a factor in limiting wildlife populations in the Arctic, a re-orientation of regulatory procedures along the lines proposed by the Administration is well justified.

The CHAIRMAN. Gentlemen, we have got eight witnesses, and they are strong, substantive witnesses and we should let them proceed.

Senator Bradley.

STATEMENT OF HON. BILL BRADLEY, U.S. SENATOR FROM NEW JERSEY

Senator BRADLEY. Mr. Chairman, this will be very brief. The problem is dependence on oil. This leads to instability. An eruption in the Persian Gulf leads to pollution of our environment. The answer is not cheap oil and more production. That does not end dependence on oil. That only increases dependence on oil.

I believe the most efficient way is higher prices to reduce consumption of oil and reduce dependence. I believe if the choice is higher prices or degradation of the environment, that the American public is going to be more willing than any of us expect to bear the burden of higher prices in order to protect the environment. That is what this is all about. That is what this debate is all about.

I hope that we do not loose sight of the environmental values which, if lost here, are lost forever.

The CHAIRMAN. Senator Stevens wanted to be heard as well.

STATEMENT OF HON. TED STEVENS, U.S. SENATOR FROM ALASKA

Senator STEVENS. Mr. Chairman, I thank you very much.

And knowing the time frame, I would ask that my statement appear in the record as though given in full. I do appreciate your courtesy in that.

Last night when we were preparing this statement I was reminded of the numbers of hours I sat here during the period of the development of the Alaska Lands Act with the former chairman of this committee, Senator Jackson.

Senator FORD. He set an indoor record.

Senator STEVENS. It was an indoor record. As a matter of fact, I had left this committee and gone to the Commerce Committee. But because my former colleague blocked the settlement of the Alaska Lands in 1978, I had to leave the Commerce Committee, come back here for 2 more years in 1979 and in 1980 to finally help work out a solution to it and then go back to the Commerce Committee.

That is to your benefit because I would have been chairman of the committee during that period of time had I stayed on the committee in 1981.

I want to point out to you that we are here because of Senator Jackson's vision. Jackson did lead the forces to set aside lands much more than I wanted to see set aside. But at the same time he had the vision to say the Alaska coastal plains should stay out of the wilderness, should stay open for oil and gas leasing, should be reviewed for environmental degradation to see what would happen.

We have waited now 10 years. We are here, I think, to determine whether or not this committee and the Congress is going to fulfill the vision of Senator Jackson with regard to the national security interest and the Alaska coastal plain.

I would like to remind you all of that. I intend to remind the Senate of that until this is over. This decision, that 1002 section, was, in fact, Senator Jackson's dream. It was his thought that this area had fantastic capability to produce oil and gas. And we now have a revised estimates indicating that that vision was absolutely correct.

I want to commend you for holding the hearings and thank you for your courtesy for allowing me to just drop back in again. I will not do to you what I did to Senator Jackson in 1975, 1976, 1977, and 1978 and come back to every hearing. But I do hope to come back from time to time.

Thank you very much.

[The prepared statement of Senator Stevens follows:]

STATEMENT OF
THE HONORABLE TED STEVENS

BEFORE THE COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE
March 12, 1991

MR. STEVENS: Chairman Johnston, Senator Wallop, thank you for allowing me this opportunity to share my views concerning one of the most important issues this Committee will face during the 102nd Congress.

I knew Governor Hickel and Senator Murkowski were going to discuss the sharing of revenues from ANWR -- I'll be pleased to discuss that later, for I was involved in the statehood bill and know the history of the 90/10 formula. I continue to support that statehood compact.

Alaskans have always supported protection of our wildlife resources. The Fairbanks Women's Home Garden Club originally suggested the Arctic wildlife withdrawal. I was an assistant to the secretary at Interior at the time, and helped draft the original withdrawal of the Wildlife Range.

We had all heard stories of oil literally seeping from the ground in ANWR, and any of you who have been there know what I mean. So when we drafted the withdrawal in the 50's, it provided that oil and gas development could go forward, but subject to the issuance of stipulations to protect the environment and the wildlife in the area.

Less than a decade later, oil was discovered at Prudhoe Bay, so no one paid much attention to ANWR and the stipulations were never issued. Then in 1973 Congress began to consider the fate of Alaska's public lands.

I appreciate being accorded the courtesy of joining you on the dais, Mr. Chairman. It brings back some fond memories of the days I sat on this Committee when Senator Jackson was Chairman. I was a member of the Committee from 1968 through 1972, and then left to take a seat on the Appropriations Committee.

Through 1975 to 1978, I routinely attended the hearings of this Committee on Alaska issues. In 1978, an Alaska lands bill cleared a House/Senate conference. That bill was supported by our Governor, our Committee on the Management of Alaska Lands (CMAL) and me; unfortunately, that bill was blocked by Senator Gravel in the last minutes of Congress in 1978.

When Congress took up the Alaska Lands Act, Senator Jackson indicated I would have to rejoin the Committee if I wanted to participate in the Alaska hearings. So in 1979 I gave up my position on the Commerce Committee, and once again returned to the Energy Committee. The Committee worked tirelessly to develop a bill that addressed the seven consensus points that the State of Alaska had articulated. One of those points was access to Alaska's tremendous oil and gas potential.

One of the United States Senate's strongest advocates for the exporation and development of the coastal plain of the Arctic National Wildlife Refuge throughout the 1970's was Senator Jackson. Senator Jackson authored The Statehood Act for Alaska in 1958; he wrote the National Environmental Policy Act in 1969; he settled the Alaska Native Land Claims in 1971; he legislatively authorized the Trans-Alaska Pipeline in 1973 and he authored the Strategic Petroleum Reserve Act.

Exploration and development of the coastal plain was Senator Jackson's last major energy policy issue before his death in September 1983. It was and is his unfinished business. Those of you who served with him know, Scoop tended to see issues in a global way.

The compromise measure that Senator Jackson helped forge redesignated ANWR as a Wildlife Refuge, and established Alaska as one of the largest conservation areas in the history of the world. The bill that he helped steward through the Senate created new parks, new refuges, new conservation areas, and new recreation areas. Today, because of that bill, 85 percent of the nation's wildlife refuge lands are in Alaska, 70 percent of the nation's parks, a quarter of the nation's forests, and a whopping two-thirds of the nation's wilderness system.

Some claim that ANWR is the last great wilderness on earth. But let's set the record straight. Alaska already has 57 million acres of wilderness including 8 million acres in ANWR. There are only 20 Members in the entire Senate who represent States as large as Alaska's wilderness system.

Half of the 19 million acre Refuge was designated as wilderness. Senator Jackson rejected suggestions that the entire refuge should be wilderness. He believed that ANWR was America's last great hope for national energy security. And the 10-02 report proved him right.

The coastal plain of the Arctic National Wildlife Refuge is the richest oil field any of us will ever see in our lifetimes. The 10-02 report estimates that the coastal plain contains as much as 9.6 billion barrels of oil, which at current rates of production will last this country for decades.

Those who falsely state that ANWR contains only a 200 day supply tried to use the same argument back when Senator Jackson helped authorize construction of the Trans Alaska Pipeline. They claimed that Prudhoe Bay could only supply the nation with oil for 600 days. Well that was back in 1973. And as I speak, Alaska oil is still fueling the nation. Today, 15 years after the pipeline was completed, Alaska still supplies 25 percent of the nation's domestic energy supply every day of the week, 365 days a year -- and Prudhoe's still going strong. Without it, the United States would now be importing over 60% of its energy from overseas.

When this Committee considered the future of ANWR back in 1978, Jackson said that our experience with the Kenai Moose Range taught us that "oil and gas work and wildlife can coexist reasonably well." But some have claimed that oil and wildlife are not compatible. But the facts don't bear that out.

Back when this Committee considered legislation authorizing construction of the pipeline, extreme environmentalists told you that the pipeline would block caribou migration, interrupt mating schedules, and destroy the population. Well, the facts haven't born that out either. Today there are six times more caribou than there were the day oil was discovered on the North Slope in 1968.

Senator Jackson knew the day would come when production would exhaust Prudhoe Bay. The reserve is now declining at an alarming rate. By the end of this decade, production will plummet from nearly 2 million barrels a day to just over 400,000 barrels a day -- that is if Congress does not approve development of ANWR.

If Senator Jackson had had his way back in 1980, after completion of a study of the oil potential and an evaluation of impacts to wildlife, the Interior Department could have initiated leasing without any further authorization. But an amendment was offered in Committee requiring Congress, instead of the Department, to make that decision. Jackson opposed the amendment, but it passed by one vote.

You are the Committee that will now initiate that decision. You will recommend whether Congress should approve development of the greatest oil reserve in North America.

As Chairman of this Committee, the two most important things to Scoop Jackson were our national security and the protection of America's natural beauty. He helped designate 57 million acres of wilderness in Alaska. And he held development of the coastal plain in abeyance until more facts were known about its oil and gas potential and how exploration and development might affect its wildlife.

But now we know. The studies this Committee mandated to determine the oil and gas potential of ANWR have been completed. Those studies show that the coastal plain is by far America's best hope to strengthen our national security without increasing imports from the volatile Middle East. And the wildlife studies have shown that oil and gas exploration is compatible with the environment.

It's been ten years since we worked with Senator Jackson on this issue. And eight year's since his death. It's time for us to fulfill his intent to balance America's national security needs and protection of her natural beauty. Under his leadership, Congress made sure that Alaska's vast areas were set aside to be protected.

The Coastal Plain has never been closed to oil and gas leasing -- this Committee required studies to be performed to "provide for a comprehensive and continuing inventory and assessment of the fish and wildlife resources of the coastal plain of the Arctic National Wildlife Refuge; an analysis of the impacts of oil and gas exploration, development, and production, and to authorize exploratory activity within the coastal plain in a manner that avoids significant adverse effects on the fish and wildlife and other resources."

All the conditions laid down by this Committee in 1980 have been met -- these Coastal Plain lands were earmarked for exploration and development if the reports demonstrated, as they do, that the environment could be protected. If Senator Jackson were here he would vote to proceed -- particularly after the crisis we have just survived.

STATEMENT OF HON. DON NICKLES, U.S. SENATOR FROM OKLAHOMA

Senator Nickles. Mr. Chairman? I have a statement I would like to include in the record, a 3-page statement. I will not read it.

I will just make one comment, Mr. Chairman, in 1990 our costs for imported oils was $54.7 billion. That is net oil imports. And that was 54 percent of our entire 1990 trade deficit. I think that is an important consideration for all of us, all of the country to make.

I would echo the concerns about the environment. I might say for those that are concerned that I would hope that they would visit the area. I think Prudhoe Bay has proven that it can be environmentally safe and sound and also for the natural habitat in the area as well.

[The prepared statement of Senator Nickles follows:]

STATEMENT OF SENATOR DON NICKLES
HEARING ON OIL DRILLING IN THE ALASKA NATIONAL WILDLIFE REFUGE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
MARCH 12, 1991

Mr. Chairman, as we move forward to focus on domestic issues, no more important energy issue that deserves a fresh look is the opening of the Alaska National Wildlife Refuge for environmentally sound oil production. It is time for us as a Nation to get past the tragic Exxon Valdez accident that killed this measure last Congress. The tragic foundering of that crude oil tanker in Prince William Sound resulted in a very thorough review of safety and emergency reponse procedures, and a tough new law to require and fund the needed improvements to tanker safety and oil spill response readiness. Having taken care of that legitimate concern, lets move on.

Fortunately, onshore Arctic oil production has an excellent environmental record and it has not taken a tragic spill to bring about improvements. The mere threat of serious curtailment of future oil production from Alaska's North Slope, and decades of intense governmental and private sector scrutiny has spurred the major Arctic oil producers to unprecedented levels of environmental sensitivity. In the 25 years since Prudhoe Bay, gravel pads for drilling and producing oil have been reduced in size by 70 percent, due largely to advances in directional drilling. In addition, the number of gravel roads and the size of oil and gas separation facilities have been reduced by 50%. Most importantly, reliance on Prudhoe and Deadhorse facilities will enable the support services areas in ANWR to be less than 10% of those earlier service areas.

There have also been tremendous advances in production waste management practices on the North Slope. Now, brines produced with the oil are injected into permitted disposal wells and drilling mud reserve pits are lined and continuously monitored. One company has installed new technology that allows elimination of the reserve pits on drilling pads by simultaneously reinjecting drilling muds brought up by the drilling operations.

Finally, the original arguments against opening the 1002 area out of concern for welfare of the caribou in ANWR has been exposed as a red herring. Detailed scientific research over the past decade years shows that the caribou do not have a "core caving" area within the proposed lease tracts. Moreover, the experience with the Central Arctic herd near Prudhoe Bay oil fields has been overwhelmingly positive: that heard has grown over 700% in the last 13 years.

Both the Administration and the Chairman and Ranking Republican propose a phased leasing program for a limited area within the Arctic National Wildlife Refuge. Both proposals call for stringent environmental safeguards and a return to the original state of nature when the production activities are concluded. In opening ANWR under these conditions, we are being balanced; we are being sensitive to environmental concerns. But we are NOT letting unreasonable fears paralyze us into further inaction that will needlessly hurt our economy and reduce our standard of living.

We need to increase domestic oil production. Increasing domestic production is the single most economical action we can take in response to our increasing dependence on foreign oil. Of course, no single action we can take will eliminate oil imports for decades to come. Oil is and will be for decades to come the world's cheapest and most convenient energy resource. We will be heavily dependent on petroleum for transportation for many decades whether or not Congress were to mandate only tiny new cars can be sold, such as some Senators are advocating. In that connection, there is no reasonable linkage between opening ANWR and a dramatic increase in CAFE. As columnist Warren Brooks put it last week:

> "It seems a very bizarre bargain. Americans just risked their lives in the Gulf in order for Congress to take away their freedom to pay higher prices to drive safer cars, and have Congress trade thousands of additional lives for the right to tap our own oil."

Instead of mandating the American people buy tiny, relatively unsafe cars as a political price for opening ANWR, shouldn't the Congress instead use the federal ANWR bonus and royalty revenues to fund incentives for shifting consumers to more fuel efficient or non-petroleum vehicles, and to encourage drivers to turn in low-mileage clunkers? Why not do both? Why not open ANWR and create incentives that can be funded with the wealth generated by opening ANWR. That is far preferable to pushing a flawed CAFE law far beyond what is feasible and safe.

In 1990, net oil imports cost the United States $54.7 billion. Oil imports represented 54% of our entire 1990 trade deficit. I do not believe the Congress should hesitate any longer. Congress should stop forcing Americans to spend billions of dollars on foreign oil when we hold the keys to billions of dollars of domestic oil that can be produced in an environmentally safe manner in the Arctic. It is time that the Congress recognize that the engineering capabilities of the oil industry is now capable of developing ANWR in an environmentally sound manner.

The CHAIRMAN. Thank you very much. Any further statements? Senator Akaka.

STATEMENT OF HON. DANIEL K. AKAKA, U.S. SENATOR FROM HAWAII

Senator AKAKA. Mr. Chairman, I will make this very brief. I have great respect for your leadership and that of the ranking member, Senator Wallop. I would like to ask that my remarks be placed in the record.

But let me say that during the 14 years that I served in the House before joining the Senate last year, I placed great emphasis on habitat preservation. Hawaii leads the Nation in native plant and animal species which are threatened or endangered or already lost forever.

And my feeling is I cannot risk having the Coastal Plain of ANWR, the super sensitive arctic preserve, undergo the same degradation as has occurred in Hawaii.

And so I ask that the rest of my comments be placed in the record.

The CHAIRMAN. Without objection.

[The prepared statement of Senator Akaka follows:]

PREPARED STATEMENT OF HON. DANIEL K. AKAKA, U.S. SENATOR FROM HAWAII

Mr. Chairman, you know I have great respect for your leadership and your experience. And I do not doubt the commitment of you, or any other Committee member, or any one else in this room today to achieving a sensible and workable energy plan that meets our Nation's energy needs.

As you all know, there are certain principles which each of us live by. We live by certain rules and follow certain guiding stars. And today, I want to point out again why, with all due respect, I continue to oppose the opening of ANWR.

During the 14 years I served in the House, before joining the Senate last year, I made habitat preservation one of my top priorities. Hawaii leads the Nation in native plant and animal species which are threatened, endangered, or already lost forever . . . I cannot risk having the Coastal Plain of ANWR, a supersensitive arctic preserve, undergo the same degradation as has occurred in Hawaii.

I also firmly believe that greater conservation efforts and a reliance on alternative energies can do more for this country than ANWR could ever promise. . . . For example, we could increase our CAFE standards for automobiles by 40% over the next decade. This would mean a savings of 2.8 million barrels of oil per day—almost four times the amount of oil we previously imported from Kuwait and Iraq combined—or almost ten times the amount of oil we could expect to produce from ANWR.

I share the commitment of everyone in this room to securing a better energy future for our Nation. I just don't believe that the opening of ANWR is the correct approach. The yields are short-term. If we open ANWR to oil and gas leasing, all we do is postpone the truly rational and lasting energy policy which we desperately need.

The CHAIRMAN. Further comments? Senator Craig.

STATEMENT OF HON. LARRY E. CRAIG, U.S. SENATOR FROM IDAHO

Senator CRAIG. Thank you very much, Mr. Chairman, for your tolerance.

As we review the legislation that both you and our Ranking Member have put together and we examine this very important section of it and discuss and hopefully resolve the issue of the opening up of the 1002 lands for exploration and development under, and let me repeat, under strict environmental guidelines and safeguards as is clearly contained in this legislation, I applaud you.

I must also say that I will not apologize for man's presence on this Earth. Nor will I ask the citizens of my State to so apologize. We ought to develop the resources we have in a wise and environmentally sound way. I hope this legislation will result in that process.

The CHAIRMAN. Thank you very much Senator Craig.

Senator Domenici.

STATEMENT OF HON. PETE V. DOMENICI, U.S. SENATOR FROM NEW MEXICO

Senator DOMENICI. Mr. Chairman, may I first say to you, you asked me within the last 3 days or 4 days whether I would join you in attempting to amend the current budget process and act so as to accommodate your bill with reference to trying to change the quality of this transaction from an asset sale, designated such by CBO, to something that would permit us to take credit for the receipts and create a new mandatory program if that be the wish of Congress.

I want to tell you and state for the record that I have reviewed it and personally I will assist you and try to amend it, both here and in the Budget Committee.

The CHAIRMAN. Thank you very, very much.

Senator DOMENICI. We will try to do that. If we have a budget resolution this year, I will either join you or you will join me and we will try to put it right in that budget resolution. With your help, we will try. You will need some of your people. I cannot get all of mine. But I will get most of them. So with that, we will get a good start on one issue.

Having said that, let me just say that my good friend from New Jersey makes a good point about price and conservation and alternative fuels. Frankly, ultimately we are not going to get huge conservation or alternatives until the price of oil goes up.

But I might say to my friend, there are only two ways for it to go up. One, we make an overt decision to raise it and that means taxes. We are not going to do that. Maybe some people here in this room want to, but I have gone through that and I do not think it is going to happen. The other is for those who control our destiny, because they have all of the oil and we do not, to decide to raise it dramatically.

And let me suggest to you that it is the latter that concerns us. That is more apt to happen. That is why we need to do this. Not that it will completely substitute for an OPEC cartel approach, but it should be that we have as much of ours as is possible and as much as is environmentally sound. That is why many of us think that we ought to move in this regard.

I thank the chairman for giving me a little time. I do agree with him. We ought to get on with the witnesses. I apologize if I took more than I should.

Thank you very much.

The CHAIRMAN. That was time well spent, Senator Domenici.

Senator DOMENICI. I thought you would be interested.

[Laughter.]

The CHAIRMAN. Senator Burns.

Senator BURNS. I may set a record, Mr. Chairman. Thank you. Proceed.

The CHAIRMAN. Thank you very much.

Our first witness today is the Honorable Walter Hickel, Governor of Alaska. We are delighted to have you back before the committee, Governor. I wish you would if you could, summarize your statement so we can get on with the questioning. I am sure there will be some good questions for you.

STATEMENT OF HON. WALTER J. HICKEL, GOVERNOR, STATE OF ALASKA

Governor HICKEL. Thank you, Mr. Chairman.

I submitted my full testimony. I have a short statement, but I think I will pass on that and just talk a little bit about the energy strategy and the things about Alaska and then open myself up for your questions.

You did a very good, thorough job in explaining the situation as did Senator Murkowski. In fact, I think you probably read my testimony and then you gave it back to me. I will not have to say too much to that.

I would just like to say that I have been involved in this since statehood as Governor, as Secretary. I remember well when President Nixon wanted to have a good oil program. I remember he supported us in limiting the amount of oil imports that we had. I was running the oil import program.

In essence, you really cannot have a national energy policy, in my opinion, unless you bring in that whole coastal area and the offshore areas of Alaska. It is not because I live there, it is because God put it there. An energy strategy in my opinion, should have a long-term plan.

Now we have Prudhoe Bay up there, Mr. Chairman, as you know well. When I went through that path in 1967, we opened Prudhoe Bay. I looked to the east and I looked to the west. The geologists did, too. And I stated at that time that there was 40 billion barrels of oil in the north slope. I remember President Johnson called a meeting here in Washington right after that and invited me down here.

We were not just talking about Prudhoe Bay, we were talking about the coastal plain to the east, which at that time was not part of ANWR.

And so if you want a national energy policy, you have to look not just where Prudhoe Bay is, not to just the east of there where the coastal plain is, but to the offshore, the Chichic Sea and the Beaufort Sea, which have tremendous geological potential. They might be empty. But you have to look.

In my opinion and in major articles that I wrote in Reader's Digest and other magazines back in the mid-1970's before the oil started pumping, I said what is needed is two oil lines and one gas line. If that were in effect you would have the equivalent of about 5 million barrels of oil a day. And it would not solve all of your problems, but it would make us more self-sufficient. I would give us a better chance to set oil strategy in the world.

I am not saying that that part of the world is a Middle East, but it could be a small Middle East.

So let us have a program that starts with developing that area first, not coming down through Bristol Bay, Mr. Chairman, do you know where Bristol Bay is to the west, because the infrastructure is not there yet. So, if we are going to protect the environment the best we can with an infrastructure, let us start in an area designated. We have structures there. Let us go from there.

Another thing I would like to mention is that ANWR, in its heart, should not be touched. Those of us who were there fighting the battle back in the 1950's remember when that was set aside. President Eisenhower set 9.5 billion acres aside in that ANWR heart. I have walked it. I have been there. There is a lot of mountains, a lot of wildlife, no trees. But it is a unique area. And so the mystique of ANWR is out there, whether it is in Atlanta, Georgia, or Redwing, Minnesota, wherever.

And in 1980 they added about 10 million acres to that 9.5 million acres. Now that 10 million acres, that part that goes down to the coast is no more part of ANWR's environment, ecological, and geological make-up. It is not that at all. That coastal plays an extension of that coastal plain where Prudhoe Bay is.

And so what has happened, you have the image of ANWR, which is real and should not be touched. But when they extended it another 10 million acres, it really took in that part. It has no bearing on ANWR from the standpoint of natural beauty.

The people that talk about that being a future Yellowstone Park have not been there. It is a rugged coastal plain. In the summertime the mosquitoes are awful thick. And the few days that the sun is out, yes you can see it. But it is just a coastal plain. It is not the mountains. It is not waterfalls.

I am just saying that when you think of ANWR, think of ANWR as it was, that heartland. The coastal plain is something the American people should use.

And as far as the environmental record, Mr. Chairman, in traveling the world arctic, and I have done that. I have been as far north in Finland as Point Barrows in Alaska. I have been through the Siberian Arctic, the Canadian Arctic. I know of no development in any part of the world that is as well done as Prudhoe Bay. They might have made some mistakes, but they were mistakes of doing, not mistakes of intent. I know of no place that spends the amount of money to protect the environment as is done there.

I have been there many, many times before there was anything there, after there is stuff there. The wildlife is there.

I facetiously one time stated at a public gathering when the caribou came up and the wildlife question was put to me, I said, will we insist on an environmental impact statement to be filed when we take the pipeline out? And they asked me to repeat the question. And I did. I said, do you think that we will have to file an environmental impact statement when we take the pipeline out? Why would you ask that? I said, because there is wildlife there that would have never existed without the pipeline. We might be disrupting their habitat.

I mention that facetiously because the wildlife is there. It has multiplied. I think the environmental records are good. Not because individual men wanted to protect them that much, but because the Federal Government and the State government, hand in hand, laid down rules and regulations by which this could be developed and how. It is a model to follow.

Last, not least, I will be through in a minute, is the statehood compact. You and I, Mr. Chairman, have talked about that in a small way. I would like to go back on that.

It was 38 years ago this January, when Truman was president that we had our first statehood bill passed in the House in 1951. I was a young carpenter building duplexes in Anchorage. In January of that year I did not like the bill. I was not in public life. And being, you know, the kind of person I might have been, I told my wife—I had never been to Washington—let us go to Washington, I do not like that statehood bill.

So I came here to see President Truman and another important person by the name of Senator Taft, the head of the Republican Senate. I had never met him, but that is who I was going to come to see because that is the way you do. You go to Washington to see the President.

Well, Mr. Chairman, I never saw the President. But I saw the Vice President twice and I pleaded my case. I literally spent 3 days in Senator Taft's office explaining what a unique country this was. And give us a chance. Give us what we have. We will build not only a great State of the Union, but a great country of the world.

And not in 5 weeks or anything like that, but a matter of days, they recommitted that bill by one vote. And at that time I said we need at least 100 million acres of land. We needed to have an opportunity to make this country work. And so in the next 6 years we fought, as individuals, not in political parties, not in political offices.

I remember, Mr. Chairman, in 1 year between 1954 and 1955, I made 12 trips to Washington, D.C. That was a long way in those days. No one paid my way. No one did anything. We fought because we believed in our heart that we had a great country and we could do something with it.

Well, during those 6 years we got this compact. We argued about things, about being treated equal as we should have been under the Constitution. And the 90/10 came about because we did not get any monies in the Reclamation Act, as Senator Murkowski mentioned. And so they gave us 90 percent of the revenue off of Federal lands from the vacant, unappropriated, unreserved.

I remember Senator Carls from Kansas stating, well, it will not cost too much because 90 percent of nothing is nothing. And we did not get part of the Reclamation Act because too much of the money would have been used in the flood plains of the interior. So the 90/10 became part of the compact.

And finally in July of 1958 we voted on that. And Secretary Seaton representing the Federal Government came to Alaska and we travelled together to sell the people this compact, this idea. Alaskan people were a little bit hesitant people to start with, especially in the few years before that, because of the way the Federal Government treated it as a colony.

And after touring the State and making good campaign, the people voted to accept this compact. Now that has been tested in the Supreme Court three times. And the Supreme Court upheld that.

Unlike most States in the Union, Alaska came in different. They came in not because Congress voted statehood, but because the people of Alaska agreed to accept that contract. That is where we are today.

As I mentioned to you in your office just in short visit, we intend to adjudicate that compact to see to it we get what is coming. That does not mean we will not negotiate. We will. We want to see ANWR open in the national interest. We want to see that part of the coastal plain open in the free world's interest. So we can have an alternative to where we go.

But in there, let us keep in mind, Mr. Chairman, the things we need. We will trade. We need access to part of our country. You have a vast country up there. There is an old English law, too, that says you cannot transfer or sell real estate to anyone without access.

Mr. Chairman, we have lots of land up there we cannot get to. We would like to get to it. We would like to be able to select some of the lands that we were not able to select from the vacant, unappropriated, unreserved. Those are just some of things we will do. We will sit down and talk and negotiate.

But I want to impress upon this committee that before anything can be done, no Governor, no congressional delegation can just arbitrarily say this is what we are going to do. We will have to take that back to the people of Alaska to vote on.

I am sure that if anything that is reasonable, they want to help with it.

Mr. Chairman, I await your questions. I could talk on lots of other things. But that is a broad outline of the way I see it.

[The prepared statement of Governor Hickel follows:]

TESTIMONY BY
THE HONORABLE WALTER J. HICKEL
GOVERNOR
STATE OF ALASKA

BEFORE THE
SENATE ENERGY AND NATURAL
RESOURCES COMMITTEE
MARCH 12, 1991
WASHINGTON, D.C.

Mr. Chairman, members of the Committee, I would like to commend you for addressing frontally the National Energy issue. Your bill is comprehensive and addresses the very obvious central themes of any legitimate energy policy: 1. the need for more domestic fossil fuel production to help us with our expensive and dangerous dependence on foreign sources; 2. a commitment to alternate energy research which will eventually eclipse fossil fuel usage some time in the 21st century; and, 3. conservation, using the gifts of nature more wisely.

Your approach differs from President Bush's energy strategy in a number of ways, and therefore sets up a legitimate debate that the Congress and the American people must participate in. Perhaps the central argument of most debate is how much a national energy policy should be mandated by government and forced upon us through laws and regulations, and how much of it should be the result of incentives and education which inspire the American people and industry to get the job done?

You have asked me to appear here because of the central role Alaska will play in the energy policy which you have spelled out in your legislation or, in fact, in any national energy plan.

At the same time, I offer a word to your debate on the wider issues.

ENERGY AND WAR

The energy issue is central to our national security, our national economy, and our national ability to be free as a people. This law, or any law, must not be written based on fads, popularity, or appealing to interest groups.

There is an unusual tie in between energy and life, energy and poverty, energy and peace.

Unless you and this body, working with the President and his Administration, reach a consensus and develop a sound energy policy to take us into the next century, other young men and women, like those in the Gulf, will be called upon to give their lives.

In reality, there is no world energy shortage. The voices of doomsday are not real. The earth will not run out of resources. The only thing we might run out of is imagination -- or the will to lead.

The crisis that exists is one of control. Fossil fuels are the major source of power now and will be for the remainder of this century. The nations which control petroleum will have great political and economic power for the foreseeable future.

THE ARCTIC AND THE MIDDLE EAST

In spite of the recent war, the Middle East remains in the driver's seat.

My message to you is that the Arctic, beginning with Alaska, will have an ever increasing role in world affairs and can help strike a new balance of power with the Middle East.

The ten million square miles on top of the earth contain a staggering wealth of fossil fuels left over from an earlier age when much of it was covered by tropical jungle.

Canada, the Scandinavian countries, and especially the Soviet Union and its mighty Siberia, will share with Alaska in this new Arctic Age which is just ahead of us.

As you on this committee debate this bill you will be at the center of what I have called for the last 20 years the "civil war of priorities" -- neighbor against neighbor, man against need, over preservation or use of our resources.

Bitter voices will be raised, on the one side pleading, "Give us work, give us energy for our homes, protect the security of America."

On the other side you will hear shouts, "Stop the rape of our environment, protect our wildlife and our wilderness."

This same battle is going on between the rich and the poor nations throughout the world.

Somewhere in between, there's a still, small voice that says, "If we work together we can do it right."

We cannot condone exploitation of one resource at the expense of another, even if that resource has no dollar value, such as a sunset, a lonely stretch of beach, or the right to roam.

But neither can we preserve untouched all those resources that man needs. All human beings must be taken into consideration -- all their needs must be addressed -- those of everyday necessity such as food and energy, and those of lasting beauty.

In evaluating the total, I am convinced we can make use and conservation compatible. For the good of the human race and our beautiful planet, they must be made compatible.

ANWR AND THE NATIONAL INTEREST

I come to you today to speak mainly about the Arctic National Wildlife Refuge, which is, in many ways, the cornerstone of your energy bill.

I'm here because the top minds in Alaska, our industry people, the Native people who live along the Arctic Coast, and the citizens from end to end of our state are over 85 percent in agreement. We sincerely believe that developing the oil and gas potential in this area is in the national interest and can be done without ruining the environment or destroying the wildlife.

When you evaluate the oil potential of the Arctic coastal plain section of the Arctic National Wildlife Refuge, I urge that you not be fooled by those with so-called "scientific estimates." To date it's all based on guesswork.

In 1967 when we discovered the greatest oil field in the history of North America at Prudhoe Bay, I estimated that the North Slope would one day produce 40 billion barrels of oil. Some people scoffed.

It was interesting when John Brown, the President of British Petroleum, visited me in Alaska in February, he gave a public speech estimating an additional 25 billion barrels of recoverable oil will be found in our state. Add that to the 10.5 billion that will come out of Prudhoe and the two or three billion from adjoining fields, and you're beginning to get closer to my 40 billion barrel estimate.

All this, of course, is also guesswork.

What I am saying is don't be limited by the 6.7 billion barrels predicted in the 1002 area by the Department of Interior geologists.

No wells have been drilled in ANWR, except for Chevron's Kaktovik site, the results of which are not public.

Until wells are drilled, it is a waste of time to debate how much oil may be there.

We do know there are twelve "elephant footprints" -- large sedimentary basins beneath the 1002 acreage, any of which could hold a giant oil field.

And I was encouraged that recently the Department of the Interior upped its prediction of the potential of discovering a major oil find to nearly fifty percent.

The other reason that coastal plain development is in the national interest, is that it will only impact a small section of the Arctic National Wildlife Refuge. The total refuge is vast in size. Its 19 million acres compares favorably with the combined New England states of New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.

Nine million acres of ANWR are already designated as legal Wilderness, meaning they are inaccessible for any type of exploration or development of resources. The Brooks Range which runs through the middle of ANWR is many miles from the area we are discussing.

In 1980, Congress was well aware that the Coastal Plain contained vast oil potential.

For that reason the 1.5 million acre 1002 area was set aside at the time of the creation of the refuge.

What this committee must recognize is that Alaska has a remarkable record of environmental sensitivity and leadership.

No other oil field in the world dedicates more dollars per barrel to environmental protection than we do at the North Slope.

Our work force is proud of their record, and our oil company leadership share that commitment, as do those of us in state government who oversee their work.

My point is that we can be a pattern for this new Arctic age. Alaska is developing the technology, the environmental expertise and the engineering to be the vanguard of this era.

Unless we do it, other nations with weaker economies and less diligent environmental safeguards, will enter the Arctic and exploit it.

Alaska is a pattern for Arctic development -- and we urge you to support us in that role -- rather than force us to sit on the sidelines while others devastate a rich and sensitive environment.

THE ROYALTY SPLIT

The people of Alaska, and I as their Governor, will insist that you not tamper with the royalty split promised us at the time of statehood.

This issue is much deeper and historic than what appears on the surface.

Around the turn of the century, there was a major change in federal land policy. To encourage development and western migration, the traditional approach of the federal government was to sell or give away its land. Under President Teddy Roosevelt this policy was replaced. A new approach began whereby the federal government chose to retain large portions of land in the western states.

The federal government knew that compensation was in order because federal retention precluded economic development and state and local taxation.

For that reason, to justify continued federal ownership of lands within western states, Congress dedicated 90 percent of the mineral leasing revenues of those lands to the states. The Mineral Leasing Act of 1920 governs the distribution of those revenues. Ninety percent are dedicated to the benefit of the states in which the lands are located. In the lower 48 states, this dedication takes the form of a direct grant of 50 percent of the revenues and the deposit of an additional 40 percent in the Reclamation Fund which are then used for water and flood control projects in those states.

During the debate over the Alaska Statehood Act in the 1950's, however, the U.S. Congress was leery of including Alaska in the Reclamation Act because of our vast rivers such as the Yukon and the Kuskokwim which flood every spring. The federal government was fearful that it would drain all of its resources for flood control in the vast Alaska interior.

Congressional deliberation was lengthy over this issue and as a result, the Alaskan people agreed to be excluded from the Reclamation Act in exchange for the inclusion of the provisions of the Mineral Leasing Act which was expressly incorporated into section 28 b of the Alaska Statehood Act. But in Alaska's case it was to receive the full 90 percent under the statute with none going to the Reclamation fund.

This was a clearly understood condition of statehood.

What's at issue for us -- and any other state worthy of the name --are the sovereign rights based on the compact of entrance into the Union.

The concept of a Compact, goes back to the Northwest Ordinances of the 1780's, adopted by the Continental Congress at the urging of Thomas Jefferson.

Under those ordinances, when a territory received sufficient population a process would begin to allow it to enter the Union "on an equal footing with the original states in all respects whatever."

This agreement was considered "as articles of compact, between the original states and the people in states in the subterritory, and forever remained unalterable, unless by common consent."

In at least three instances, the Compact Doctrine has been take as far as the U.S. Supreme Court, and in each case -- sometimes favoring the state and sometimes favoring the federal government -- the Compact was upheld.

That's why, members of the Senate Energy Committee, if you insist on reducing the royalty share promised to the people of Alaska, I will file suit for injunctive relief.

The people of Alaska as a party to the Statehood Compact have a right to object to a unilateral attempt to amend it.

And I intend to fight it to the Supreme Court and the World Court if necessary.

However, as I have said earlier, we believe that the opening of ANWR is in the national interest. We are therefore prepared to negotiate.

In other words, in exchange for a percentage of our royalty share, if Congress offers a return of valuable additional acreage to state ownership, access to our lands -- access which has indeed been cut off by federal land selection patterns -- a higher base royalty from which we both might benefit -- or some other concept which has not yet surfaced, we will be pleased to come to the table.

But no governor of the State of Alaska, no congressional delegation, will approve such a negotiation singlehandedly.
The Alaska people must approve it.

Because in Alaska the nature of the Compact is more binding than any other state in the nation.

In our state, the people, at the insistence of Congress, went to the polling places all over our Territory to vote on the terms that had been laid out for us.

Those terms obligated us never again to lay claim to the two-thirds of the state retained by the federal government. And there were many other provisions which we accepted in order to obtain the benefits of statehood.

In exchange, we were given several promises -- and the 90/10 royalty split was one of them.

Ladies and gentlemen of Congress, I urge you to come to the table to discuss this issue. If not, our state will use all of its resources to protect the sanctity of the Statehood Compact.

We are tired of those who think they own us but fulfill none of the obligations of ownership.

We are tired of those who accuse us of environmental irresponsibility, when in fact we are a pattern for how to care for the environment and develop resources -- a pattern that could well be a model for Third World developing nations.

We are tired of those who distort the arguments about ANWR's coastal plain -- who proclaim it to be a Yellowstone Park laden with wildlife, mountains and trees, when in fact, it is a barren, marshy wilderness in the summer, infested with uncountable mosquitoes, and locked in temperatures of 60 and 70 degrees below zero for up to nine months of the year.

People of Congress, People of America, we want to help you and we want to help provide our nation's energy supply.

But let's deal on the basis of honesty. Let's deal on the basis of fairness. From there, we can move forward together.

Thank you very much.

The CHAIRMAN. Thank you, Governor. You are still in great form.

Governor HICKEL. Thank you.

The CHAIRMAN. Governor, the people of Alaska support drilling in ANWR, do they?

Governor HICKEL. Yes. I would say 85 percent of people, that is not just a wild figure, that support drilling of ANWR, under the conditions we did at Prudhoe Bay and the international interests.

The CHAIRMAN. We took this committee up to ANWR a few years go and we went to the village of Kaktovik and met with the natives there and they were supporting drilling in ANWR at that time. Is that still the case?

Governor HICKEL. As far as I know, Mr. Chairman, that is right.

The CHAIRMAN. You were just elected Governor as an Independent. You had a Democratic opponent and a Republican opponent. Is it not a fact that all three candidates ran on a "develop ANWR" platform?

Governor HICKEL. That is right, Mr. Chairman, yes.

The CHAIRMAN. And you think perhaps 85 percent of the people of Alaska support this?

Governor HICKEL. Yes. I would like to take a poll on that, but that 85 percent has been used. It is what I am convinced would show up.

The CHAIRMAN. Thank you very much.

Senator Wallop.

Senator WALLOP. Mr. Chairman, let me just echo your statement. Governor, it is a pleasure to welcome you back to the committee.

Governor HICKEL. Thank you.

Senator WALLOP. You come to the committee with your reputation as an Alaskan, but as well as a reputation of a former Secretary of the Interior, with high credentials for environmental sensitivity.

I do not know anybody who would argue that statement, and it seems inconceivable to me that even though you are faced with the great potential riches of your State, that you would even consider sacrificing those material riches for the State and the environment which you love and which you know and which you have fought so hard for.

I just want to say thank you for coming and giving your judgment, and I wish many of those who have another judgment would listen to the judgment of those who know the State, those who have been on the ground and seen it and those whose love for it outweighs any of the material gains that could come from it.

If it satisfies you, sir, it satisfies me.

Governor HICKEL. Thank you.

The CHAIRMAN. Thank you very much, Senator Wallop.

Senator Ford.

Senator FORD. Thank you, Mr. Chairman.

Governor, having been a Governor, I understand that you have to represent your people and the emotions there are very important to you and important to the area you represent.

And I read your statement and I listened to your emotional statement and your background, and I know you are as committed to certain things as your people are. Am I correct that, one, you are for the opening up of ANWR, but like everything else around here, that depends on what you get?

One, you are willing to come to the table, and if you are willing to come to the table, what can you negotiate when you say the present royalty situation has been before the Supreme Court three times.

Governor HICKEL. The present royalty?

Senator FORD. Yes. The compact or the 90/10——

Governor HICKEL. Yes.

Senator FORD. How can you negotiate that away?

Governor HICKEL. Well, the people of Alaska could vote to accept an amendment to that compact and it would be legal.

Senator FORD. So even if we pass a bill here that enjoins ANWR in its drilling, we would have to wait until we had a vote of the people of Alaska before that could be the law could be effective?

Governor HICKEL. If you change the compact. If you did not, nothing would happen. If you changed the compact, we could call a special election, but if the compact was not changed, no problem.

Senator FORD. What if we changed the compact and what is it that you would require of us to satisfy possibly, the change in the compact?

Governor HICKEL. I think there could be a change in the royalty arrangement. I think there could be a change in offering the people of Alaska a percentage of the offshore potential. There are lands in the corridor that we cannot select that the State would like to have, that could be done.

There are other lands available that you could offer us an interest in. Whatever we could lay out and negotiate, we would take back to the people of Alaska.

Senator FORD. Governor, I went through the indoor record for committee meetings——

Governor HICKEL. Indoor record?

Senator FORD. With Senator Stevens.

Governor HICKEL. Oh, yes.

Senator FORD. We held, I believe it was 44 meetings before we got the Alaskan Lands bill out, and does that mean we have to go back now and open up that legislation in order to accommodate you?

Governor HICKEL. Absolutely not——

Senator FORD. Why would we not, because we have already gotten that in place. It seems like to me, if we start negotiating, we will have to go back and change our law in addition to have you have a vote by the people to see if we can amend the compact.

I am concerned about this because our chairman is very diligent in what he is trying to do, but ANWR becomes a central figure of this piece of this legislation, I have been told, and I suspect it is.

So if we are going to get into a vote of the people by amending the compact, then by agreeing to it, we have to change the law here. Even if we pass this piece of legislation, it appears it will be some time before we could put it into place.

Governor HICKEL. Well, Senator, I am not saying change the compact. The legislation changes the compact. So if you change the compact, do you have to go back and hold those hearings again?

We are not saying change the compact. The legislation is saying that.

Senator FORD. I understand that. The legislation—by this legislation, we changed that compact. Then if that compact is changed by this legislation, then your people have to agree to it or in your opinion it is null and void?

Governor HICKEL. Yes. In other words, we just have to have a vote on it.

Senator FORD. And if the people vote it down, the compact is sustained and our legislation has to come back to the table again.

I thank the Chair.

The CHAIRMAN. Thank you.

Senator Murkowski.

Senator MURKOWSKI. Thank you, Mr. Chairman.

I think that the committee needs to understand the difference between the Statehood Act and the Mineral Leasing Act, which was amended to accommodate the State of Alaska and what other States enjoy, the western reclamation States.

Governor, I would ask you, is it not true that under the Mineral Leasing Act, of all revenues paid into the Treasury from oil and gas development on public lands outside the State of Alaska, 50 percent is paid to the State where the leased land is located; 40 percent is paid into a reclamation fund that goes back to that State in reclamation projects.

So is it not 90 percent that those western reclamation States receive, and the Federal Government receives 10 percent?

Governor HICKEL. That is right, Senator. It is all in my testimony. I did not read my testimony; I filed it. That is correct.

Senator MURKOWSKI. So in reality, Alaska is not asking for anything different than any other State receives. It is just that the other States were set up for reclamation because there was a need for reclamation, and Alaska has never had any development, so we have never had any need, nor do we receive any reclamation formula?

Governor HICKEL. And that was all debated in the statehood bill from 1956 to 1958.

Senator MURKOWSKI. And was not the reason that the State of Alaska was excluded from reclamation, because the Federal Government had basically withdrawn nearly two-thirds of the State from State selection? And it was the feeling of Congress that much of this land would have had resource potential, and the State could have developed it, but since the Federal Government withdrew it, there was justification for the State getting a 90/10 formula which was the same numbers——

Governor HICKEL. Same formula.

Senator MURKOWSKI. But a different application, since there was no need for reclamation.

Governor HICKEL. That is right, Senator, and as a matter of fact, the 90/10, there was not any 90 percent then because there was not any development on Federal lands at that point, and so they did not want us to have that reclamation money so they just took the 90, the 40 and the 50, added it together and gave us 90 percent of the potential on Federal lands, and that became part of the compact.

Senator MURKOWSKI. So for the record then, under the Mineral Leasing Act and the Alaska Statehood Act, of all revenues paid into the Treasury from oil and gas development on public lands within Alaska——

Governor HICKEL. Within Alaska.

Senator MURKOWSKI. The current law is that 90 percent of the revenue is paid to the State and 10 percent remains in the general Treasury. So in your opinion, is there any difference? Is the Federal Government getting short-changed on the difference between how they treat Alaska and the Western States that are recipients of reclamation funds?

Governor HICKEL. No, and that was the testimony, and that was the belief when we came in as a State and that is the belief today.

Senator MURKOWSKI. Governor, I wonder if you could generalize very briefly on the attitude of Alaska's native community, the residents that live there. There is a statement by Jacob Adams of the Arctic Slope Regional Council which outlines why the natives from the North Slope support opening ANWR.

Is it revenue or do they want jobs or——

Governor HICKEL. I think both, Senator. I think they saw what happened in Prudhoe. It did help their area up there. It helped the State treasury, and they saw if there had to be development, it could be done right, and they benefited. They benefited in their local area from the development of Prudhoe Bay.

Senator MURKOWSKI. Now, Governor, you are aware of a commitment on many of the national environmental groups that have joined together and there was an occasion here in Washington where a number of the groups gathered about 6 or 8 weeks ago, the occasion was Wild Alaska.

And there was a publication put out, and most of the national environmental groups signed on, and on page 3 of that publication was a commitment that in addition to the 56 million acres of wilderness that had already been set aside in Alaska as wilderness, their commitment was to withdraw another 100 million acres of wilderness.

And I am wondering, what your attitude is as Governor towards that commitment by the national environmental groups, and how you feel about national organizations committed to withdrawing another 100 million acres from your State which would put roughly three-quarters of the State in a perpetual state of wilderness?

Governor HICKEL. Well, those of us who live there, Senator, including yourself, know that there are tremendous areas of beauty and there are tremendous areas that are not.

And part of the statehood compact was that we receive 90 percent from the vacant, unappropriated and unreserved lands. Now unlike the great Midwest of the continental United States or unlike temperate zones around the world in which we perceive how people live and how they do things, the surface lands on the vast part of Alaska are not to grow food or not to plow under or plant trees or change any way you want to do it.

Its value on the surface is to transportation routes, habitat for wildlife. We are not in competition for habitat from people, and so the value of our wealth up there is not on top of the ground, basically it is in the ground.

So when they withdraw 100 million acres, Mr. Chairman, they take away from us the potential that we have in our future.

Now we are not going to oppose all the withdrawing of wilderness, but there ought to be some compensation because that was part of what was given in the statehood compact, an opportunity to have some resource development and some wealth under that land.

I hesitate to think that if they would have withdrawn everything up there, like some would like to do today, there would be no economic way for civilization to proceed, and that is not the way God meant it in my opinion.

We have a right to live and to grow and to do those things that civilizations have, and you have an obligation of ownership in Alaska unlike any State in the Union. This State is a government State. Less than one-half of 1 percent is in private hands, outside of the co-ops of the native land claim settlement.

So the challenge was there, and one of the reasons that I came back to fight so hard 35 years ago or more, and the challenge up there, Mr. Chairman, we have a free society, a democracy. We have a capital-intensive monetary system which was set up 200 years ago by America.

And when America was first put together there were not any Federal lands. They even had to buy lands for defense. And so this whole system worked, and Hawaii came in, but it was basically private lands.

The challenge in my part of the world is how do we take a country, under a free democracy, a free society, a capital-intensive system, and make it work where the Government owns everything.

Now there are obligations to ownership. Now the Federal Government has the ownership, but do they have the obligation to do anything about it, except just to set it away, out of sight, out of mind.

Mr. Chairman, that is our part of the world. It is a unique, good part of the world. It is a transfer between the Anglo-Christian-Judaeo Western civilization and that civilization to the Far East.

And so do not hamstring us to tight that we cannot move. We have an opportunity to help, not only ourselves, but the Nation as a whole, and that is the difference.

This is not Kansas. This is not Oklahoma. This is a unique geographical location, unique climatical situation, unique culture. It is not a temperate zone. It is arctic and sub-arctic and it is different.

Allow us to plead our case of what we need.

The **Chairman**. Senator Bradley.

Senator **Bradley**. Governor, let us assume you are on television, and somebody says to you, why should we develop ANWR. What is your 10-second answer?

Governor **Hickel**. I would say in the national interest, in the use of fossil fuels.

Senator **Bradley**. 10 seconds.

Governor **Hickel**. I chaired a conference with the western countries in Dubrovnik, Yugoslavia, 10 or more years ago. And my charge was to talk about the energy—alternate energy sources—winds, solar, tides, geothermal and all that.

And a Russian scientist stood up by the name of Sterokovich. He said, Governor, you make a great case, but that will not take care of the problem. He says the next 25 years at least it will be either fossil fuels or nuclear. And if nuclear is not politically obtainable, then you are going to use fossil fuels.

So I am saying that, yes, we need conservation. We need alternate energy sources. I did the study—chaired it on geothermal. The point I am making, it will not satisfy the situation at this moment. Let us face fact it is fossil fuels. Maybe you could get more natural gas, which is fossil fuels, to help the situation. But in ANWR it should be open in the national interest.

Senator **Bradley**. Let us assume that ANWR produces 400,000, 500,000 barrels a day.

Governor **Hickel**. Or it is a million.

Senator **Bradley**. Assume we do not know. Let us say, therefore, our dependence on foreign oil drops from 8 million to 7.5 million barrels of oil a day. We continue to consume about 16 million, 17 million. The OPEC decides they are going to double the price of oil. What happens to the price domestically of all 17 million barrels of oil?

Governor **Hickel**. It would probably go up.

Senator **Bradley**. It goes up.

Governor **Hickel**. Sure.

Senator **Bradley**. So how has ANWR helped us?

Governor **Hickel**. Well, we are buying that much less. I think——

Senator **Bradley**. But we are paying more.

Governor **Hickel**. We are paying it to ourselves, yes. I think the potential of that arctic coast is at least another 2 million barrels a day. Now, if you just stop at ANWR, ANWR could be that, too. It could not be, too. I understand that. But I would say it would become a lot closer to a million barrels a day, than it would be 500,000. But that is just my opinion. But whatever it is, it helps the situation. If 500,000 barrels a day does not help us, why would 2 million barrels a day help us? Why do anything, you know? So every little bit helps.

I know you are not trying to solve all the problems at once, but in my statement I believe that you could have an national energy policy on that part I talked about—the offshore and the onshore—and get up to the equivalent of, with gas and oil, the 5 million barrels a day.

Senator **Bradley**. If you had a disruption and prices doubled, you would pay—the American consumers would pay the same amount of money, whether there was ANWR or not, is that not correct?

Governor **Hickel**. That is probably correct, unless we were energy self-sufficient. But if we paid it, we would be paying it to ourselves and it would strengthen the dollar rather than weaken it.

Senator **Bradley**. We would be paying it to our own oil companies, is that it?

Governor **Hickel**. Our own oil companies and our own country, because it is governmental land.

Senator **Bradley**. Are they our oil companies?

Governor **Hickel**. Well, no. I meant American oil companies, basically, although you might have British Petroleum in there.

Senator **Bradley**. Ah.

Governor HICKEL. But you would also be putting it into——

Senator BRADLEY. So the payment is not just to American oil companies?

Governor HICKEL. Well, it depends on who got the leases, yes. But remember the 90 percent would go into a governmental rather than private because of the ownership.

Senator BRADLEY. Thank you very much.

The CHAIRMAN. Senator Burns.

Senator BURNS. I have—thank you, Mr. Chairman. I just have one question. And, Governor, thank you for coming today.

Could you briefly—just briefly—outline for me your State reclamation laws, because I guess there are some concerns about this. And in your estimation are they strong enough and stout enough and would you have money to deal with Prudhoe Bay once it outlives or its economic life comes to close?

Governor HICKEL. Do I understand the question? Do we have strong enough reclamation laws? Yes.

Senator BURNS. In your opinion?

Governor HICKEL. Yes, environmental and reclamation, yes. And as far as would we have money left, well, civilizations always have to keep creating economic development. We have put aside a fund called the permanent fund to help us if that goes down. But when Prudhoe Bay stops, literally the young people leave. If there are not jobs there, that is what happens. It does not affect us. We are going to be there no matter what. But the young leave, because there is not any opportunity and hope. And that is why you have to keep civilizations going.

Senator BURNS. I understand that. I am just concerned, though, and just for the——

Governor HICKEL. What is this concern?

Senator BURNS. Well, the concern is that on the split—in other words, you are getting 90 percent of the money going back into the State of Alaska, will there be money for reclamation at Prudhoe Bay?

Governor HICKEL. Oh, sure.

Senator BURNS. And I think to quiet the nerves of the people who have some environmental concerns there. And basically that is what the argument about this is all about. If we could talk and I would agree with Senator Bradley that it may be that everybody is centered around cost, but it just does not stop at the cost of transportation.

Governor HICKEL. Oh, no.

Senator MURKOWSKI. Industry has to take it all out when it is gone.

Senator BURNS. That is exactly—okay.

Governor HICKEL. That is right. It is there, and the commitment is there. As far as—well, that is another question. I was going to say something else.

Senator BURNS. Well, I say the reason that we have laws like NEPA and the Endangered Species Act. We have the laws in place to deal with activities of this kind.

Governor HICKEL. That is right.

Senator BURNS. That is the reason those laws were passed in this Nation. And I understand that our law in Montana—what we have to go through before we can mine or develop our natural gas, and I understand what you are facing.

And again I would finish the thought that with the debate centered around the cost of conservation, that the American people are willing to pay more. There are some who can pay no more, and it just does not start with transportation. It affects every product we use today, on consumer goods to those of necessity.

So, thank you, Governor, for coming today.

Governor HICKEL. I would just like to add one thing, that Prudhoe Bay was on State lands. And I think the jobs that the State did, along with the Federal Government and the environmental groups, they are to be commended.

The CHAIRMAN. Senator Conrad.

Senator MURKOWSKI. If I may just add a point.

Governor, I believe it is a condition that the oil companies must remove all of their presence when the Prudhoe Bay field is exhausted, at their expense. So that is the arrangement.

The CHAIRMAN. Senator Conrad.

Senator CONRAD. In the interest of time, Mr. Chairman, I know you have a lot of witnesses here. I will forgo my question.

The CHAIRMAN. Thank you very much.

Senator Wellstone.

STATEMENT OF HON. PAUL WELLSTONE, U.S. SENATOR FROM MINNESOTA

Senator WELLSTONE. Thank you, Mr. Chairman. I apologize, Governor, for being late and, Mr. Chairman, I do have a statement that I would like to submit for the record.

The CHAIRMAN. No objection.

Senator WELLSTONE. Governor, I have one question that I think we will discuss probably over and over again. Let me first of all say how much respect I have for you and the chairman. I really would like to see an energy policy that does not include drilling in the Arctic National Wildlife Refuge.

Why would it not make more sense to drill for oil in our transportation system with fuel energy standards or to drill for oil at our homes and work place with energy efficiency standards, or to drill for oil in marginal farm land for ethanol, which, unlike oil, would not be just a one time thing? It would be renewable and it would make us more self-sufficient. And it would be more respectful of the environment.

The case can be made that this is a way we could drill for oil and do better. I understand your testimony, Governor, but why would it not make more sense to think about it this way?

Governor HICKEL. Do you mean talk about agricultural raising of methanol?

Senator WELLSTONE. Ethanol.

Governor HICKEL. You can do that—you can do that.

Senator WELLSTONE. Across the board. I am just trying to think of the alternatives and whether or not we might not think about oil and drilling for oil conceptually in a different way and why this would not make more sense.

Governor HICKEL. Well, I do not know in a different way. Natural gas probably has less environmental problems than crude oil—pardon me my throat. I think if you stopped using oil today, you would basically stop civilizations.

And those of us that have been trying to talk about alternate energy sources, they are sort of in their infancy. Some can be done. Some have economic problems. But I think you are going to have to have a phase in and phase out. You are not going to do it in any 3 or 5 years or maybe even 10.

And so you can do the things you are talking about, but they are not going to, in my opinion, solve civilization's problems on the short term.

Senator WELLSTONE. Okay. I do not want to stop civilization, Governor.

Governor HICKEL. Yes, I understand that.

Senator WELLSTONE. But I am very interested in a different concept as to how we meet this need. And I believe we could pursue these other paths so that we would not have to go forward with this. And I just wonder whether you have looked at this and sort of made the comparison.

Governor HICKEL. Sure, I have looked at it. The environment is a one-world thing. The environment of Alaska is not just the environment of the world. The environment of Oklahoma or Kansas is just as important. And so can you drill—we could drill for oil or mine for something in the heartland of America. Does it disrupt the environment any more than it would be if you had a mine in Alaska?

And so you have to look at this thing, not out-of-sight, out-of-mind, but as a real thing. And so I commend you for thinking about those alternatives, but they are going to be disrupting some environment somewhere.

Senator WELLSTONE. Okay. I do not want to use anymore time. And Mr. Chairman, I look forward to hearing other witnesses, because I think discussion is central to the energy policy debate.

Thank you.

[The prepared statement of Senator Wellstone follows:]

STATEMENT OF SENATOR PAUL D. WELLSTONE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
March 12, 1991

Mr. Chairman, I have great respect for you, but on this we differ. About the last thing I'd like to see in our energy policy is drilling for oil in the Arctic National Wildlife Refuge.

This committee is engaged in an historic exercise -- an effort to shape the transition to our nation's energy future.

I believe that energy future should be a sustainable one that places great value on protecting the environment. I further believe that becoming the world's leader in renewable energy sources and energy-efficient technologies can be the key to the long-term economic vitality and international competitiveness of our nation.

Right now, instead of drilling for oil in the Arctic National Wildlife Refuge, we should be drilling for oil in our transportation system by pressing our auto industry to build the most efficient cars and trucks in the world.

Instead of drilling for oil in the Arctic National Wildlife Refuge, we should be drilling for oil in our homes and workplaces with more efficient buildings and appliances.

Instead of drilling for oil in the Arctic National Wildlife Refuge, Mr. Chairman, in my part of the country we could someday soon be drilling for an oil substitute on our marginal farmland with ethanol from cellulose and other biomass.

Unlike ANWR oil, a quick blip that will soon be gone, such saved energy and renewable resources will go on year after year and will be the underpinnings of a vital economic future for our nation.

In shaping the energy transition, it should be the job of the federal government to make sure each state has the funds to invest in building a sustainable energy infrastructure that best fits the resources of its region.

The proposal I made yesterday is a good example of this new way of thinking, Mr. Chairman. Instead of letting the windfall profits of nearly six billion dollars from your oil import diversion proposal go entirely to domestic oil producers, the proceeds could be collected by an excess profits tax and distributed through grants to the states, first to alleviate the hardship of higher oil prices on low income families and second to provide the states with substantial funds for investing in the vision of a sustainable energy future that they choose.

That, Mr. Chairman, makes much more sense to me than drilling for oil in the Arctic National Wildlife Refuge. Thank you.

The CHAIRMAN. Thank you, Senator Wellstone.

Governor, thank you very much. We are always glad to have you before this committee. Thank you very much.

Governor HICKEL. Thank you.

The CHAIRMAN. Our next panel includes Secretary of Energy, Admiral James D. Watkins; David O'Neal, Assistant Secretary for Land and Minerals Management of the Department of the Interior; he is accompanied by John Turner, Director of the U.S. Fish and Wildlife Service; and also Rear Admiral Dave E. Ciancaglini, who is Commander of the 17th Coast Guard District in Juneau, Alaska. We are also glad to have Henson Moore here, the Deputy Secretary of Energy, accompanying Admiral Watkins.

Admiral, welcome back. Please proceed.

STATEMENT OF HON. JAMES D. WATKINS, SECRETARY, DEPARTMENT OF ENERGY, ACCOMPANIED BY HENSON MOORE, DEPUTY SECRETARY OF ENERGY

Secretary WATKINS. Thank you, Mr. Chairman. I have submitted a written statement that I would like included in the record. I would like to make an oral statement now, sir.

Mr. Chairman, I appreciate the opportunity you have provided to discuss the role that the development of a small portion of the Arctic National Wildlife Refuge—ANWR—could play in our energy future.

I am accompanied today by Henson Moore, Deputy Secretary of Energy, Mr. Dave O'Neal—you introduced him—and Mr. John Turner, both from Interior, who have been very helpful in putting our arms around this entire issue of ANWR.

As I have stated in previous discussions with this committee on the National Energy Strategy, we cannot solely produce or solely conserve our way into energy security. I have passed out to members of the committee certain slides I would like to refer you to now, Mr. Chairman and members.

The first is figure 1, which as you recall was taken out of the National Energy Strategy, that indicates action on both fronts—that is, on increasing oil production as well as reducing the demand for oil—are in order in the National Energy Strategy. If we choose to attack the challenge of energy security only from the demand side, we will do the job only half-way.

The energy strategy proposes three critical initiatives to enhance domestic oil production: an aggressive R&D program to develop and use advanced technology for oil recovery, access to discrete portions of the Outer Continental Shelf, and access to a small fraction of the coastal plain of ANWR.

Just as we cannot achieve greater energy security by looking only to the demand side of the oil equation, we also cannot eliminate supply options without substantial consequences. The three NES supply initiatives address supply needs at different points in time. Enhanced oil recovery comes on earlier, ANWR and Outer Continental Shelf later, but all provide time for the transition away from oil, particularly in the transportation sector, as the National Energy Strategy envisions.

Certainly, our uncertainty associated with each requires that we proceed with all three if our long-term objectives are to be met. These uncertainties include:

The speed with which enhanced oil recovery technology can be developed, and its cost, especially in relation to the market price of oil.

Second, another uncertainty, the probability of finding oil in ANWR and the size of the reserves that will be discovered.

Third, the relative mix of oil and gas that will be found and developed in the proposed outer continental shelf lease areas.

Now, many claims have been made about the relative importance of the potential oil resources of the coastal plain of ANWR and their overall value to the State of Alaska and to the United States. I would like to refer now to Figure 2, which is the comparative oil potential of the Arctic National Wildlife Refuge in comparison with other States.

As shown in that figure, ANWR resources could be as large or larger than those found in the geologically similar North Slope of Alaska, and as large, or larger, than the proven reserves in the largest lower 48 fields.

The Department of the Interior estimates that there is a 46 percent chance that oil will be found in ANWR in economically producible amounts, an extremely high probability of commercially recoverable oil for a virtually unexplored area. As shown on the vertical red standpipe, the mean ANWR potential is 3.6 billion barrels if oil is found in commercial quantities.

There is, however, a 5 percent chance that economically recoverable amounts will be at least 8.8 billion barrels, and that shows on the top part of that standpipe.

Now, it should be recalled that before discovery, geological reports indicated that Prudhoe Bay had only a 2 percent chance of containing 2 billion barrels of oil. Ultimate recovery from Prudhoe Bay is now estimated at about 12 billion barrels. So I think from this the discovered resources there turned out to be close to the 5 percent probability estimate calculated prior to leasing.

Further, it has become popular, we know, to say that even the vast quantity of oil potentially available in ANWR would be only a few months' worth of total U.S. consumption. This is hardly a meaningful yardstick. Over the last 100 years, 80 percent of the oil fields discovered on shore in the United States contained less than 1 day's worth of U.S. consumption. Of the 31 States that presently produce oil, only six States, other than Alaska, have proved reserves that exceed a 30-day supply.

If we had succumbed to the "it is only a few months' worth of oil" argument during the debate on opening up Alaska's North Slope, we would have deprived the Nation of the benefits of its enormous reserves, now thought to be more than 12 billion barrels, as I mentioned earlier. We would have deprived ourselves of the output from an area that is providing 25 percent of the Nation's total domestic oil production as we sit here this morning.

Thankfully, that illogical argument did not prevail then and it should not prevail now, because what is at stake in ANWR could be one of the largest oil fields, or the largest oil field, ever discovered in the United States.

Now I would like to focus on another point that I do not think has been made very often. There is a direct relationship between future ANWR production and Alaska North Slope production and the future of the Trans-Alaska Pipeline System, called TAPS. This relationship is often forgotten in the ANWR debates.

I would like to focus now on Figure 3. Figure 3 is a plot of the North Slope plus the ANWR production profile for the next 40 years in the National Energy Strategy. As Figure 3 graphically indicates, the North Slope production is on a rapid downward slide. Figure 3 represents the final period of North Slope production.

Prudhoe Bay was discovered in 1969, prior to the period shown on the chart; 9 years elapsed between discovery and the first oil flowing through TAPS. Production from current fields, which is shown in light blue on the chart, peaked in 1988.

Current production will decline from its present 1.9 million barrels a day to 300,000 barrels per day in the year 2009. This is a critical juncture; the intersection of the light blue area and the white TAPS throughput threshold line. That is the line at which it no longer becomes economically or technically feasible to move oil, so at this point it will in all likelihood become technically infeasible to operate TAPS, and it would likely be shut down in the year 2009.

If the pipeline were shut down in 2009, we would risk abandoning the more than 1 billion barrels of reserves from five newly discovered existing North Slope fields shown in that light blue and gray area beneath the white TAPS throughput threshold line, and beyond the year 2009. So you can see the blue and gray area under that curve represents what we would lose in the 1 billion barrels. This is 1 billion barrels of oil we would not produce because we could not get it to market.

In order to keep TAPS open and develop other North Slope fields like Point McIntyre and perhaps the Beaufort Sea area, we must develop the resources of ANWR. As shown on the chart, the mean ANWR case in dark blue—this would be the 3.6 billion barrel estimate of recoverable sources by the Department of the Interior—it would extend the life of the pipeline by 9 years, out to at least 2018.

The 5 percent probability case, on the other hand—8.8 billion barrels—would extend the life of the pipeline by 16 years, until the year 2025, and virtually recover all of the oil from the current fields in the North Slope.

We have only a narrow window of opportunity, however. We cannot turn on ANWR like a spigot. This is a major point contained within a technical report we are issuing today.

Mr. Chairman, the bottom line here is that if we are not to walk away from more than 1 billion barrels of known reserves elsewhere on the North Slope, we must get on with developing the Arctic National Wildlife Refuge.

Now, let me talk just briefly about ANWR and the environment. In considering decisions on ANWR there is a desperate need for airing of facts. With me today, John Turner, Director of Fish and Wildlife Service, will discuss the environment of ANWR with you, but it is important to note that the amount of the coastal plain of ANWR that would be directly affected by full oil development is minuscule, as shown on the map depicting the ANWR footprint, which I believe you may have been given copies of. Mr. Turner will discuss this in more depth.

The area of ANWR directly involved is about 13,000 acres. This represents less than 1 percent of the 1.5 million acre coastal plain. The coastal plain itself represents less than 10 percent of the 19-million acre size of the Arctic National Wildlife Refuge.

Senator MURKOWSKI. Admiral, could you point out on that chart as you go through?

Secretary WATKINS. Through that chart again?

Senator MURKOWSKI. Well, just as you are proceeding. I do not want to delay this.

Secretary WATKINS. Yes, all right. What we are looking at here is a perspective on what the footprint really is, which means that we are going from the State of Alaska to the Arctic National Wildlife Refuge of 19 million acres and then down to the area called the 1002 area, which is 1.5 million acres on the coastal plain, and then that in turn comes down to a 13,000 acre footprint where the actual pads and the work would be conducted. I think that places in perspective what we are really talking about here when we deal with this area, that we are not going into the entire——

Senator MURKOWSKI. Where is the 13,000 on the big map?

Mr. O'NEAL. It is not represented.

Senator MURKOWSKI. Why?

Secretary WATKINS. It is too small to show on that size chart.

The area of ANWR directly involved is about 13,000 acres, then. This represents less than 1 percent of the 1.5 million acres I pointed out, and as the map of ANWR development and existing Alaska national parks, reserves, and refuges shows, the 13,000 acres of such development is vanishingly small compared with the more than 125 million acres presently protected by the National Park Service and the Fish and Wildlife Service.

Next, I would like to focus on another aspect—the value of ANWR. Aside from the benefits already listed, ANWR development would:

1. Reverse recent trends and maintain oil production investments and jobs in the United States.
2. Improve the U.S. balance of trade by reducing the level and cost of future U.S. oil imports, and
3. Contribute to energy security by reducing our dependence on oil imported from insecure sources.

Moreover, the projected revenues from ANWR leasing bonuses and royalty payments are very significant. As you know, the Federal budget rules were profoundly changed by the enactment of the 1990 Budget Reconciliation Act. Any new Federal expenditure proposal must be accompanied by identifiable offsetting revenue proposals.

As a matter of fact, this was key to the development of the energy strategy. We were admonished by all the interagency groups that we were not to embark on something that called for expenditures that did not also have identifiable revenue associated with it, expenditures obviously are contained in the NES. ANWR revenues are one key offset element as are revenues from carefully targeted portions of the outer continental shelf and the sale or the leasing of the naval petroleum reserve.

This is strictly the ANWR revenue shown on this chart, called Figure 4. As it indicates, revenues from ANWR leases and royalties will substantially contribute to Treasury receipts and could offset the costs of significant new Federal initiatives. We are talking about fiscal resources coming from oil exploration here that will offset, or will in large measure offset the expenditures needed to develop alternatives to oil. In that context, then, I think it makes a great deal of sense to address the issue of the revenues from this important Alaskan treasure.

Revenue from ANWR lease bonuses is projected to total $1.9 billion in fiscal year 1993, as shown in the first green standpipe under the time line that you can see there, and $1.2 billion in the fiscal year 1995.

Those are near-term revenues that permit us to ensure that the National Energy Strategy is a total fiscal package that contains budget offsets.

The 5-year incremental costs of the National Energy Strategy has been estimated at $1.5 billion, shown as the summation of the red standpipes there in the same period. These costs are mainly to finance an expanded research and development portfolio. We have shown projected future ANWR revenues there in the blue, the dark blue being the lower estimates—the 3.6 billion at the 46 percent probability level and the upper one at 8.8 billion barrels at the 5 percent probability level—to give you some feel for the ability of that field to contribute to the United States' economic and energy security for a long period of time.

In conclusion, Mr. Chairman, ANWR can be responsibly developed. Its contribution to achieving U.S. energy economic and environmental objectives cannot be overemphasized. As a nation, we need to manage a 20- to 30-year transition from our present intensive reliance on oil to a future reliance on environmentally superior energy technology. The development of ANWR is a critical element of that transition, both from the standpoint of maintaining the U.S. as a viable oil-producing province and to provide the resources needed to find alternatives to oil.

We know that ANWR's resources are undoubtedly significant, even at the lower range of the estimates. We know that ANWR can be developed without damage to the ecology of the region. So, Mr. Chairman, the bottom line is, in our opinion that the National Energy Strategy analysis has shown that we can neither produce nor conserve our way to a sound energy future. We have to have both.

If we cannot develop ANWR, with its vast resource potential, because it is only a few months' worth of oil, then what new areas can we ever go to? How much oil must a new area have before critics will accept its need for development?

If we cannot develop ANWR when we have before us at Prudhoe Bay the example of more than a decade of environmentally responsible oil production, then what new area can we ever develop? How much evidence of environmentally responsible development will be enough to satisfy the critics?

According to an environmental witness at our NES hearing in Fairbanks, Alaska, a lot of environmental organizations do not want ANWR open under any circumstances, no matter how much environmental protection would be provided. This position is taken with full knowledge of ANWR's vast resource potential and the benefits it could bring to the Nation.

So, Mr. Chairman, we have a very basic decision before us. Are we ever going to permit the exploration and development of oil from new areas in this country again? If the answer is no, then we must be prepared to send hundreds of billions of dollars overseas to buy foreign oil, dollars that could otherwise have stayed here and been productive in the United States.

I urge the Congress to proceed with enactment of the National Energy Strategy Act of 1991, which includes provisions to allow access to the coastal plain of the Arctic National Wildlife Refuge.

[The prepared statement of Secretary Watkins follows:]

Statement of

Admiral James D. Watkins
Secretary of Energy

To The

Committee on Energy and Natural Resources
U.S. Senate

March 12, 1991

Mr. Chairman and members of the Committee, the National Energy Strategy (NES) that I have previously presented to you contains a balanced plan of action aimed at improving U.S. energy security, environmental quality, and economic performance. I am pleased to discuss with you today the role that the development of the coastal plain of the Arctic National Wildlife Refuge (ANWR) is expected to play in the successful implementation of the NES.

U.S. oil production and consumption patterns make it clear that we cannot either produce or conserve our way to energy security. Action must be taken to reduce impediments to efficient supply and demand energy options in the near term and to lay the foundation for a long-term transition away from the use of oil.

To stabilize the projected erosion of our domestic oil production capacity, the Administration has proposed three critical initiatives.

- The first is an aggressive Government-industry research and development program to develop and deploy advanced technology for enhanced oil recovery. This will allow us to tap the over 300 billion barrels of lower-48 oil unreachable through primary recovery methods.

- The second is to provide access to certain portions of the outer continental shelf (OCS) under stringent environmental safeguards.

- The third is to provide access to 1.5 million acres on the coastal plain of ANWR, where, using environmentally superior production technology that has been successfully tested on the North Slope of Alaska, only 13,000 acres would be directly affected by oil production.

The 1002 area of ANWR potentially contains the single largest oil field in North America. Its development would provide multiple benefits.

Economic Benefits:

- The development of ANWR will have a measurable impact on the economy of Alaska, which will be adversely affected by the projected dramatic decline of North Slope production. North Slope production is expected to decline from about 1.8 million B/D to less than 300,000 barrels/day by about 2010, at which point it may not be economically or technically possible to operate the Trans-Alaska Pipeline System (TAPS), and it could be shut down. The unavailability of TAPS would risk abandoning 1 billion barrels of existing North Slope reserves because these could no longer be transported to markets.

- ANWR development would improve our balance of trade by reducing the level of oil imports. As documented in the

NES, U.S. oil imports are projected to rise to 65% of domestic consumption by 2010 in the absence of NES policy intervention. NES recommendations aimed at oil supply enhancement and demand reductions could result in keeping oil import levels in the range of 40% to 45%.

Budgetary Benefits:

- Revenue from ANWR leases is expected to total $1.9 billion in Fiscal Year 1993, and $1.2 billion in FY 95. Further revenues can be expected from royalties that would be collected from ANWR production beginning in the year 2000, if leasing in undertaken now. Aggregate royalties could be as high as $30 billion (in undiscounted 1989 dollars), assuming a one-eighth royalty rate and the 5% economically recoverable resource base.

Energy Security Benefits

- The NES recognizes that oil will remain a world-wide critical fuel for the foreseeable future and that Persian Gulf producers will continue to play an important role in the international oil market. While no combination of policies could completely insulate the United States from disruptions in the oil market, the NES recommends a number of policy initiatives to reduce our economic vulnerability to those disruptions. These include the expansion of world-wide oil production outside the Persian Gulf, including the expansion of production in the United States.

- Without substantial new domestic oil production, the United States will need to acquire increasing quantities of oil on the international market. From the standpoint of energy security, higher U.S. imports would tend to offset the benefits of increasing production capacity around the world by obviating the higher contribution of non-Persian Gulf producers.

- Production from ANWR would contribute directly to improved flexibility in worldwide oil supply availability. If new production capacity outside the Persian Gulf is not brought on line in the next two decades, OPEC producers may be in a position to increasingly influence oil supply and price.

ANWR and the OCS represent the only significant remaining undeveloped prospects in the United States. The oil resources potentially available in these areas, but especially in ANWR, could be as large or larger than those of Prudhoe Bay. The development of these resources can be carried out with technology and safeguards superior to those employed in any field in the past. The impact that the development of these regions will have on the environment can be limited and well managed.

Alternatives to the development of ANWR carry their own social, economic, security and environmental costs. The NES analysis indicates, for example, that in order to reduce oil consumption by about 500,000 B/D, a 50 cents per gallon gasoline tax would need to be imposed on American consumers. Aside from the severe effects such a tax would have on the American economy, its impact would be felt most adversely by low income households. Regulatory prescriptions are also not a panacea. Extremely high auto fuel efficiency standards would need to be set at non-cost effective levels of 40 mpg or higher, in order to obtain oil conservation levels of 500,000 B/D by 2005.

The transition to an economy less dependent on oil will take time. The enhanced investments in technology to displace oil, proposed in the NES, will bear fruit. However, the 3.4 million B/D in reduced consumption, projected by the NES in 2010, appear to be the best that can be achieved without heavily burdening the economy, the environment, and the American people.

Conclusion

Access to ANWR is an essential component of an effective, reasonable National Energy Strategy. The oil resources of this region represent a significant prospect. ANWR can be developed in an environmentally sensitive manner. ANWR will boost U.S. energy security while keeping U.S. investments and jobs at home.

The CHAIRMAN. Thank you very much, Mr. Secretary.

Our next witness will be Mr. David O'Neal, Assistant Secretary for Land and Minerals Management of the Department of the Interior.

Mr. O'Neal.

STATEMENT OF DAVID C. O'NEAL, ASSISTANT SECRETARY, LAND AND MINERALS MANAGEMENT, DEPARTMENT OF THE INTERIOR, ACCOMPANIED BY JOHN TURNER, DIRECTOR, FISH AND WILDLIFE SERVICE

Mr. O'NEAL. Mr. Chairman, with your permission I will ask to have my testimony entered for the record.

The CHAIRMAN. Without objection.

Mr. O'NEAL. And I would give just a brief synopsis.

The Department of the Interior feels that it is time we moved forward on opening the Coastal Plain on behalf of the American people in a sound, environmental manner. The Department of the Interior also would like to make mention that we have world-class scientists and experts with access to the state-of-the-art equipment and design ready, and have been looking at the situation for many years.

My testimony also speaks of declining domestic production, and increasing imports, as you related to in your opening remarks, Mr. Chairman. My testimony also looks at the differences between Senate bill S. 341, title IX, and title III, subpart A of the administration's National Energy Strategy.

And basically, we find the differences that are there can be resolved quickly.

My testimony—I would conclude by saying closes with the acknowledgement that once opened, the coastal plain will become one of the most closely monitored spot on earth. And I think that we can prove here, as we have proved in other areas, that environmentally sound development can occur. But I believe those opposed to that, perhaps, have hidden agendas, or at least agendas that are different from the one I have proposed today.

Thank you, Mr. Chairman.

[The prepared statements of Mr. O'Neal and Mr. Turner follow:]

STATEMENT OF
DAVID C. O'NEAL
ASSISTANT SECRETARY
LAND AND MINERALS MANAGEMENT
U.S. DEPARTMENT OF THE INTERIOR
BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE
CONCERNING
TITLE IX
OIL AND GAS LEASING IN THE ARCTIC NATIONAL WILDLIFE REFUGE
OF S.341
THE NATIONAL ENERGY SECURITY ACT OF 1991

MARCH 12, 1991

Mr. Chairman, I appreciate this opportunity to present the views of the Department of the Interior regarding Title IX of S. 341 regarding the coastal plain of the Arctic National Wildlife Refuge (ANWR). Almost two years ago to the day, Secretary Lujan testified before this committee on S. 406, the Arctic Coastal Plain Competitive Oil and Gas Leasing Act, which also proposed opening the ANWR coastal plain to environmentally responsible, competitive oil and gas leasing.

Before commenting on specifics of S. 341, let me state that since the release to Congress in 1987 of the Department's assessment of oil and gas and other resources of the ANWR coastal plain, President Reagan and now President Bush have fully supported opening this 1.5 million acre portion of the 19 million acre refuge to oil exploration and development. This support has been and continues to be based on our conclusion that these operations can be conducted in a manner that protects the environment from significant adverse effects.

S. 341 would authorize direct spending from earmarked ANWR receipts, which is subject to annual pay-as-you-go (PAYGO) requirements of the Budget Enforcement Act (BEA) of 1990. Preliminary Office of Management and Budget (OMB) estimates of this direct spending total approximately $1 billion returning to the State of Alaska in FY 1993, with an additional $1 billion being spent for energy programs (beginning in FY 1995). In FY 1996, $600 million would return to the State of Alaska, and an additional $600 million spent for energy programs. These OMB estimates are tentative and subject to change.

The National Energy Strategy and the President's FY 1992 Budget propose that ANWR receipts be retained in the Treasury for deficit reduction. This is proposed as a fair way of ensuring that the benefits of ANWR development are distributed among all U.S. taxpayers. Under the Administration's proposal, ANWR development would reduce the projected FY 1993 deficit by $1.9 billion and the FY 1995 deficit by $1.2 billion. By earmarking all ANWR receipts for direct spending, S. 341 would achieve no deficit reduction relative to the President's FY 1992 Budget.

Also, the BEA requires that, to avoid a PAYGO sequester, new direct spending must be offset fully in each fiscal year, FY 1991 through FY 1995. Under S. 341, even though new ANWR receipts would generate a net deficit reduction of approximately $1 billion in FY 1993 relative to the current services baseline, it would authorize new, non-offset direct spending of about $1 billion in FY 1995. This is inconsistent with the BEA and would be subject to a point of order on the Senate floor on these grounds, which would require the votes of 60 Senators to override. The Administration opposes any new direct spending unless it is offset consistent with the BEA.

In addition, OMB and the Congressional Budget Office (CBO) disagree on how to score ANWR receipts. CBO believes these receipts should be scored as asset sales, and therefore would not count as offsets under the G-R-H, as amended, (under G-R-H rules, asset sales not authorized or ongoing as of September 1987 cannot be scored as deficit reduction measures). OMB believes that ANWR receipts can be scored under PAYGO principles since lease sales are not asset sales.

We at the Department of the Interior, in conjunction with other Federal Departments, can move forward with a leasing program for the coastal plain in a manner that protects the interests of all Americans. We will do so by protecting the interests of the environmental community which is concerned about the ecosystems of Alaska's North Slope. We will do so by protecting the interests of American taxpayers who are worried about increased taxes and the will benefit from billions of dollars in new Federal revenues. We will do so by protecting the interests of consumers who need a secure source of oil to go to work, harvest our crops, and transport our goods. We will do so by protecting all Americans by providing a secure supply of oil to support the defense of this Nation. We in the Department of the Interior believe that we can, and must, balance these competing interests. It will not be easy, but we are ready for the challenge.

The Department of the Interior is responsible for land resources on which more domestic oil production occurs than any other public or private entity. But, we are also one of the most environmentally involved agencies in the Federal Government. Our Fish and Wildlife Service includes world-class scientists and experts, as does our Bureau of Land Management, Minerals Management Service, Geological Survey, and our

Office of Environmental Affairs. Some of these agencies are currently providing assistance to eastern European countries who are becoming more aware of the need to protect the environment in developing their natural resources. Experts from some of these agencies are also involved in advising Middle Eastern countries on efforts to rehabilitate habitats from the ravages of the recently concluded conflict in that area.

In other words, the Department has a cadre of professionals who can get the job done in an environmentally responsible manner. This Committee has twice recognized this fact by passing legislation opening the ANWR coastal plain to oil exploration and production. During those earlier debates, it became obvious that the Department had convinced most members of its expertise and ability to mitigate potential impacts. However, it was also obvious that members of Congress, even the most ardent supporters of opening the coastal plain had questions regarding the role of the North Slope as it pertains to America's energy needs. Because of that concern, this Committee included language in previous legislation calling for an effort to identify America's energy needs and available appropriate responses.

The Department of Energy, headed by Secretary Watkins, has concluded a massive effort in developing the President's National Energy Strategy. The Department of the Interior was closely involved in that effort as were other Federal Departments. Secretary Lujan co-chaired a public hearing in Houston, Texas, and the Department co-chaired a special hearing in Alaska. We strongly support the findings and conclusions of the National Energy Strategy and will work closely with the Department of Energy, with industry, with the environmental community, and with Congress to implement the President's Strategy.

Events which have occurred between Secretary Lujan's previous testimony and this testimony only serve to reinforce some of the concerns he expressed in 1989. Our domestic production of crude oil has declined significantly, and our dependence on foreign oil has increased. In addition, the Persian Gulf crisis reminds us that our oil supplies from foreign suppliers are vulnerable to disruption.

Oil is presently a critical component of our national economy, supplying more than 40 percent of our total energy needs. Oil provides almost 97 percent of the energy used for U.S. transportation. During 1990, the United States consumed almost 17 million barrels of oil per day.

Our domestic production of oil is decreasing rapidly. In 1990, U.S. oil production averaged 7.3 million barrels per day, about 43 percent of our oil consumption. Our average domestic production has decreased nearly 20 percent in 5 years. There are many reasons for this decline. Many large domestic oil fields have been depleted, and uneconomic wells have been plugged and abandoned. Many prospective areas of the U.S., both onshore and offshore, have been placed off limits even to environmentally responsible exploration and development.

To minimize our vulnerability to oil supply shocks and maximize our energy security, the National Energy strategy endorses a balanced program of increasing the efficiency of energy use and diversifying worldwide supplies of petroleum. The Strategy calls specifically for the environmentally responsible development of the ANWR coastal plain as a major step in increasing our domestic oil production.

The Department of the Interior recently announced some revised estimates related to the oil resources believed to lie beneath the coastal plain. In 1987, the Department estimated the marginal probability of discovering economically recoverable oil at about 19 percent (one chance in five). Based on an reexamination of data used for the 1987 estimate and new and improved information, the Bureau of Land Management (BLM) revised the marginal probability to about 46 percent (one chance in two). This is a significant increase. The BLM also increased its estimate of the mean economically recoverable oil from 3.23 to 3.57 billion barrels of oil, and it decreased its estimate of the minimum economic field size from 440 to 400 million barrels. The BLM is continuing to reassess its earlier estimates of the potential high and low values of the oil resource and the economics of developing these resources. We expect this reassessment to be complete and available in April.

The United States has experienced a steady advance of technology applied to oil and gas exploration and production activities on the North Slope. With advances in technologies such as directional drilling and waste management and disposal, industry has been able to consolidate its facilities and reduce the surface area directly affected by its operations. This consolidation is demonstrated by the difference between the early facilities at Prudhoe Bay and those existing at the more modern Kuparuk and Endicott operations. Based on the technologies available at the time, the Department, in 1987, estimated that production of the oil resources beneath the coastal plain would directly affect 12,650 acres (about 20 square miles) or 0.8 percent of the 1002 area. In its independent assessment of technology applicable to oil and gas operations on the coastal plain, the Office of Technology Assessment (OTA) concluded in 1989 that the area directly affected by production from two fields would be 7,040 acres (about 11 square miles) or less than 0.5 percent of the 1002 area. Since the completion of those assessments, industry has further advanced its directional drilling technology to the point that horizontal drilling is practiced routinely in several areas of the United States. In addition, the Department of the Interior is evaluating the concept of exploratory operations which would be supported completely by helicopter and not require extensive gravel pads, ice pads or ice roads or other surface disturbing infrastructure.

The estimates of areas directly affected by oil and gas operations were predicated by the Department and the OTA on the assumption that oil will be discovered. However, if initial exploratory drilling does not demonstrate the presence of economically recoverable resources, the area affected by oil and gas operations will be substantially less. For example, the famous KIC well, the only well drilled directly on the ANWR coastal plain, occupied a gravel pad of about 3.5 acres. That well, drilled in 1985, does not represent the advances in drilling technology developed since then. However, if 20 KIC wells were required to confirm the absence of economically recoverable oil beneath the coastal plain, the total area directly affected would be 70 acres, less than 0.005 percent of that area, and these sites would be scattered across the coastal plain.

Alaska's North Slope has significant oil potential. To date 32 oil and gas accumulations have been discovered, and seven fields are productive. Exploration continues both onshore and offshore. The orderly development of this oil depends in large part on the accessibility and continued safe operation of the Trans Alaska Pipeline. The pipeline carries 25 percent of our domestic oil production from the North Slope to Valdez. But, North Slope oil production has begun to decline at a rate approaching 10 percent per year over the next 5 years. Without additional oil being produced, flow through the pipeline will decrease to a point that the pipeline must be closed. Development of a large discovery on the ANWR coastal plain would extend the life of the pipeline and increase oil recovery from other fields by almost 600 million barrels by allowing them to produce longer.

Following the Exxon Valdez tanker spill, the Bureau of Land Management, the State of Alaska, and the Aleyska Pipeline Company reviewed and updated the oil spill contingency plan for the pipeline. The BLM and the State also formed a joint Federal/State Pipeline Monitoring Office to expedite the resolution of pipeline related issues and respond effectively to emergencies. Both the BLM and the State have been monitoring closely Aleyska's program to repair sections of the pipeline which have experienced some corrosion.

The Administration recently included draft legislation for opening the ANWR coastal plain in its proposed National Energy Strategy Act of 1991. The Department of Energy has offered the proposed National Energy

Strategy Act to Congress as the Administration's proposal for legislation to support the President's National Energy Strategy. The Administration's proposed legislation on oil and gas leasing in the coastal plain includes many of the provisions contained in S. 684 which was passed by this Committee on March 29, 1989. We believe that those provisions of S.684 which pertained to oil exploration and development, were generally a reasonable legislative approach to opening the coastal plain to environmentally responsible oil and gas operations.

Although the language in Title IX of S.341 is similar to the language in Title III, Subtitle A of the proposed National Energy Strategy Act, there are some significant differences between these two bills.

° S.341 provides for a 50-50 distribution of oil and gas revenues between the State of Alaska and the Federal Government, whereas the proposed National Energy Strategy Act provides for all revenues to be deposited in the U.S. Treasury, consistent with the President's FY 1992 Budget.

Under a 50-50 split between the Federal Government and the State of Alaska over the 30-year life of ANWR oil production, Alaska could receive about $15 billion, which is substantially more than the Department of the Interior has paid to all other States since mineral development receipt-sharing began in 1920.

The Administration recognizes that officials of the State of Alaska are proposing even more favorable terms for the State. The Administration plans to work with Congress to resolve this issue in a manner that is fair to the citizens of Alaska and the rest of the Nation.

° S.341 provides for all Federal revenues to be deposited in a special account known as the Energy Security Fund to support energy-related projects and programs to enhance this Nation's energy security and reduce its dependence on imported oil. The proposed National Energy Strategy Act provides that all Federal revenues be placed in miscellaneous receipts of the Treasury. We believe that Federal support for energy-related programs and projects should be subject to annual review through the appropriations process.

° S.341 provides annual funding of $5 million to the Environmental Protection Agency for environmental monitoring of oil and gas operations and enforcement of environmental statutes under its jurisdiction. At least 25 percent of this amount is to be provided to the State of Alaska. This provision does not appear in the proposed National Energy Strategy Act. We believe that funding for enforcement of Federal environmental laws should be determined through the annual appropriations process where actual needs can be more accurately addressed.

° S. 341 limits civil penalties to $10,000 per day after a reasonable period of time for corrective action has expired. The proposed National Energy Strategy Act provides a limit of $20,000 per day, adjusted every three years according to the Consumer Price Index, and allows for immediate assessment of civil penalties under certain circumstances. In this regard, the National Energy Strategy Act is consistent with provisions included in the Oil Spill Pollution Act of 1990.

° S.341 does not define the term "significant adverse effect" which is used as the environmental standard for all oil and gas activities conducted on the coastal plain. The proposed National Energy strategy Act defines the term, thereby providing a clear understanding of this requirement to both the Federal land manager and the operator.

In 1988, the Department of the Interior committed to the Environmental Protection Agency to prepare site-specific NEPA documents prior to initiation of exploration activities. We, again, affirm our position to do so.

Overall, the similarities between Title IX of S. 341 and Title III, Subpart A of the National Energy Strategy Act are much greater than the differences. We believe that the differences between these acts can be resolved quickly. We are available to work with your staff to resolve these and other differences. Because of the similarities between these two acts, we are generally in a position to support Title IX of S.341 with resolution of our few differences. We will be providing the committee with our technical comments and analyses shortly.

The oil and gas resources of the coastal plain are America's bridge to an energy future based on greater efficiency of energy use and a broad spectrum of abundant, safe and reasonably priced fuels. The President's National Energy Strategy envisions all of these. The time has come to move forward on this issue.

In closing, the Department of the Interior believes that it has answered the legitimate concerns about the impacts of oil exploration and production on the ANWR coastal plain. We will continue to work with Congress in addressing additional concerns that may arise as the public debate continues. We believe that we have the record and the ability to ease your concerns about the issue of environmental impacts. We can open the coastal plain to oil development with no significant adverse impact on the North Slope. We have repeatedly committed to you that we will comply with the National Environmental Policy Act of 1969 at every stage of the leasing, exploration, and development and production process. We believe that the Department of Energy has clearly addressed the issue of the role of North Slope oil in satisfying our national energy needs.

The record is clear. American farmers need the oil from ANWR; our trucking industry needs it; our tourism industry needs it; our airline industry needs it; our fishing industry needs it; and our Defense Department needs it. All segments of American society, all regions of America need this legislation and the oil and economic benefits it provides.

Finally, as a footnote, I would add that once having opened the ANWR coastal plain, we recognize that through our efforts, your efforts, efforts of other Federal and State agencies, and the environmental community, the coastal plain will become the most closely monitored spot of land on the earth.

Mr. Chairman, thank you for this opportunity to appear before you. I would be pleased to answer any questions you or any members of your committee might have at this time.

TESTIMONY OF JOHN TURNER, DIRECTOR, U.S. FISH AND WILDLIFE SERVICE, BEFORE THE COMMITTEE ON ENERGY AND NATURAL RESOURCES, UNITED STATES SENATE, REGARDING OIL AND GAS LEASING AT ARCTIC NATIONAL WILDLIFE REFUGE

March 12, 1991

Mr. Chairman, I am pleased to have this opportunity to highlight our continuing program of biological studies on the coastal plain of the Arctic National Wildlife Refuge, and to re-emphasize our commitment to carry out a Congressionally authorized oil and gas leasing program in an environmentally sound manner. We have been conducting extensive biological studies for many years on refuge wildlife and fisheries resources and their habitat, and I am convinced that we know enough to do a good job in opening ANWR while offering good biological protection.

The Department's 1987 Report to Congress, commonly known as the 1002 Report, was based on the best available information, including a five-year series of baseline biological studies conducted following the passage of the Alaska National Interest Lands Conservation Act (ANILCA) in 1980. In terms of biological impacts from a leasing program, the report assessed the potential effects at three stages of activity -- seismic exploration, exploratory drilling, and production.

In the 1002 Report, the Department predicted that seismic exploration and exploratory drilling would have only minor or negligible effects on most fish and wildlife species. If recoverable amounts of oil are discovered, major impacts to caribou, muskoxen, subsistence uses, water resources, and recreational values were predicted to result from production.

To mitigate the predicted impacts, the report listed 29 examples of measures that might be employed, based upon further evaluation. The report anticipated that these or other measures with the same or improved results would be incorporated where applicable into site-specific requirements for individual leases to ensure that no unnecessary adverse effects occur. We are now working to further define most appropriate mitigation measures. Critical to this effort are findings from our current biological study program.

The Service has continued extensive biological studies on the Coastal Plain of the Refuge since 1987 in order to compile additional resource management information, and to further define potential impacts and possible mitigation measures should a leasing program be approved. Highlights of the most recent studies include the following:

- The Porcupine caribou herd, which annually uses the Coastal Plain for calving and post-calving, continues to grow at an annual rate of approximately 5 percent, and now numbers about 180,000 animals. Radio-collared cows have added considerable data to the studies of this important resource.

- Muskox have continued to disperse from the refuge since about 1986, moving both toward the Prudhoe Bay oil fields and the wilderness area to the east of the 1002 area. Their population on the refuge itself has stabilized at about 350 animals.

- Polar bear maternity dens continue to be found on the coastal plain annually, and preliminary findings continue to indicate the importance of the 1002 area to the Beaufort Sea polar bear population. Although polar bears den much more frequently on ice than on land, those that do den on land generally do so on or adjacent to the Arctic Refuge Coastal Plain. Preliminary findings indicate that productivity of these land dens is proving to be higher than that of ice dens.

- A number of other studies continue -- snow goose staging, waterbird use of potential port sites, vegetation mapping, water resources, coastal and inland fisheries, baseline contaminant levels, recovery of the KIC well site, and weather. Data collection for most of these studies is scheduled to continue through 1992.

The wildlife management information being obtained in our current study program reflects the Service's continuing efforts to aggressively address the fish, wildlife, and habitat management responsibilities attendant to an authorized oil and gas leasing program on the Coastal Plain of the Arctic National Wildlife Refuge.

Thank you again, Mr. Chairman. I will be pleased to respond to any questions you may have.

The CHAIRMAN. Thank you very much, Mr. O'Neal.

Admiral Ciancaglini.

STATEMENT OF REAR ADMIRAL DAVID E. CIANCAGLINI, COMMANDER, 17th COAST GUARD DISTRICT, JUNEAU, AK, ACCOMPANIED BY CAPTAIN WILLIAM HOLT, CHIEF, MARINE ENVIRONMENTAL PROTECTION DIVISION, U.S. COAST GUARD HEADQUARTERS; AND CAPTAIN JACK McCARTY, PROGRAM MANAGER, VESSEL TRAFFIC SYSTEM, U.S. COAST GUARD

Admiral CIANCAGLINI. Good morning, Mr. Chairman.

I have a prepared statement, which I can either read or offer for submission to the record, sir.

The CHAIRMAN. You can submit it for the record.

Admiral CIANCAGLINI. Aye, sir.

Mr. Chairman, members of the committee, it is a pleasure to be here today to address you on the status of oil spill preparedness and improvements in the vessel traffic system in Prince William Sound, as a result of the enactment of the Oil Pollution Act of 1990.

With regard to oil spill preparedness, the Coast Guard has staged additional oil response equipment at Kodiak for the deployment of its C-130 aircraft at that air station located there, and by buoy tenders and other vessels located in Kodiak.

Tankers in the Port of Valdez are boomed-off, while they are engaged in fielding operations. Contingency plans have been updated. Alyeska has acquired more equipment in the forms of skimmers, surface escort vessels, barges, booms, et cetera.

Ship personnel are screened by Alyesksa before they board vessels for alcohol consumption. Masters of the tankers are given breathalyzer tests 1 hour before the ship sails. Vessels are prestaged in Prince William Sound to recover oil in the event of a spill.

Escort vessels accompany tankers from the Port of Valdez, through the narrows, through Prince William Sound and through Hinchinbrook entrance. A new skimming vessel is due to arrive shortly, in Valdez. Exercises are held on a regular basis, and fishermen, persons from the community, Federal and State agencies are all involved in this particular effort.

With regard to the improvements of the vessel traffic system, they include the assignment by the Coast Guard of additional personnel to our vessel traffic system. We have a new radar installed by the narrows, which will enable us to better resolve targets during periods of inclement weather.

We have upgraded both the communications and our radar micro-link systems. We have developed a plan to install an independent surveillance system which will enable us to track vessels from outside of Prince William Sound in the Gulf of Alaska, through Prince William Sound, past Bligh Reef, through the narrows, and into the Port of Valdez.

We have designed and constructed a new light at Bligh Reef. We have increased standards for watch standards. We plot vessel positions to the limits of the radar. We have established weather restrictions for vessels to operate during high wind conditions. We have also designated one-way zones for conditions when—for conditions of icing, when the ice breaks off of the Columbia Glacier and passes through the vessel transit areas.

Much has been done to improve every organization's effectiveness in facilitating the transportation of oil, and in responding to an oil spill. An outstanding check and balance for this whole system is the regional Citizens' Advisory Council which will be empowered to perform independent research and monitoring of an oil spill prevention and response efforts, tanker safety, and environmental effects of terminal operations. They will serve on a continuing basis to help ensure that the system remains in a high state of readiness.

And Mr. Chairman, I would also like to state that in addition to being the Commander of the Coast Guard for the Alaskan region, I am also the Federal on-scene coordinator for the Exxon Valdez oil spill. And I am also a Navy Component Commander for the Alaskan Command. And I have accompanying me Captain William Holt, who is the Chief of the Marine Environmental Protection Division at Coast Guard Headquarters, and Captain Jack McCarty, who is the program manager for the Vessel Traffic System for the Coast Guard.

I am prepared to answer any questions, sir.

[The prepared statement of Rear Admiral Ciancaglini follows:]

OPENING STATEMENT OF
REAR ADMIRAL DAVID E. CIANCAGLINI
COMMANDER, SEVENTEENTH COAST GUARD DISTRICT
JUNEAU ALASKA
BEFORE
THE UNITED STATES SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES.

12 MARCH 1991

MR. CHAIRMAN, MEMBERS OF THE COMMITTEE, IT IS A PLEASURE TO BE HERE TODAY TO ADDRESS YOU ON THE STATUS OF OIL SPILL PREPAREDNESS AND IMPROVEMENTS TO THE VESSEL TRAFFIC SYSTEM IN PRINCE WILLIAM SOUND AS A RESULT OF THE ENACTMENT OF THE OIL POLLUTION ACT OF 1990, OPA 90. AS YOU MAY EXPECT, A LOT HAS OCCURRED IN PRINCE WILLIAM SOUND SINCE 24 MARCH 1989.

TO GIVE YOU A FRAME OF REFERENCE, I REPORTED IN JUNE 1989 FOR DUTY AS COMMANDER OF THE SEVENTEENTH COAST GUARD DISTRICT, WHICH ENCOMPASSES THE ENTIRE STATE OF ALASKA, AND HAVE IN THAT CAPACITY BEEN INVOLVED IN ALL IMPROVEMENTS THAT HAVE OCCURRED IN PRINCE WILLIAM SOUND OR THE PORT OF VALDEZ SINCE THAT DATE. I WILL DISCUSS THESE IMPROVEMENTS BY DIVIDING THIS PRESENTATION INTO TWO MAJOR AREAS: VESSEL TRAFFIC SYSTEM IMPROVEMENTS AND OIL SPILL PREPAREDNESS. I AM ACCOMPANIED TODAY BY CAPTAIN WILLIAM HOLT, CHIEF OF THE COAST GUARD'S MARINE ENVIRONMENTAL PROTECTION DIVISION AND CAPTAIN JOHN E. McCARTY, PROGRAM MANAGER FOR THE COAST GUARD VESSEL TRAFFIC SERVICE PROGRAM.

VESSEL TRAFFIC SYSTEM IMPROVEMENTS

IMMEDIATELY AFTER THE GROUNDING OF THE T/V EXXON VALDEZ ON 24 MARCH 1989, THE COMMANDANT OF THE COAST GUARD ORDERED AN INTERNAL INVESTIGATION INTO THE EVENTS SURROUNDING THE GROUNDING AS THEY RELATED TO VTS PERFORMANCE AND INVOLVEMENT. ON 2 APRIL 1989, THE COMMANDANT WENT ON TO DIRECT A TEMPORARY INCREASE IN THE NUMBER OF PERSONNEL ASSIGNED TO THE VESSEL TRAFFIC CENTER; HE ALSO ORDERED THE TRACKING OF ALL CONTACTS TO THE EXTREME LIMITS OF THE RADAR'S RANGE, RATHER THAN ONLY WITHIN THE LIMITS OF THE "ONE WAY ZONE" IN VALDEZ NARROWS. THESE CHANGES, INITIATED PRIOR TO ENACTMENT OF OPA 90, REMAIN IN EFFECT.

IN ADDITION TO THESE PROCEDURAL CHANGES, THE VESSEL TRAFFIC SYSTEM AT PRINCE WILLIAM SOUND WAS FURTHER IMPROVED PRIOR TO THE ENACTMENT OF OPA 90, THROUGH A NUMBER OF EQUIPMENT AND RESOURCE ENHANCEMENTS. THESE INCLUDE:

- INCREASED THE PERSONNEL ALLOWANCE OF VESSEL TRAFFIC SERVICE (VTS) PRINCE WILLIAM SOUND BY THREE ADDITIONAL CHIEF PETTY OFFICERS. THIS CHANGE ALLOWS THE VTS TO BE MANNED BY A SUPERVISOR AND OPERATOR IN ADDITION TO THE COMMUNICATIONS WATCHSTANDER, 24 HOURS/DAY.

- REPLACED ONE OF THE TWO RADARS LOCATED AT POTATO POINT WITH A RADAR WHICH PROVIDES IMPROVED ALL-WEATHER COVERAGE OF VALDEZ ARM AND THE VALDEZ NARROWS.

- REPLACED AND UPGRADED THE MICROWAVE LINKS BETWEEN THE TWO RADAR SITES AND THE VESSEL TRAFFIC CENTER (VTC) IN OCTOBER 1990 AT A COST OF $650,000. THIS IS THE FIRST PHASE OF A MUCH LARGER PROJECT TO REPLACE ALL COMMUNICATIONS RADIOS, MICROWAVE RELAY LINKS AND THE VESSEL TRAFFIC CENTER CONSOLES WHICH WILL BE COMPLETED THIS SUMMER.

- DESIGNED AND CONSTRUCTED A FIXED LIGHT STRUCTURE AT BLIGH REEF. THIS PROJECT WAS DESIGNED IN FEBRUARY 90 AND COMPLETED IN SEPTEMBER 90 AT A COST OF $367,000. ALTHOUGH THIS INITIATIVE WAS LATER FUNDED BY OPA 90, THE COAST GUARD HAD NEARLY COMPLETED THE PROJECT WHEN THE ACT WAS SIGNED.

- AMENDED THE VTS PRINCE WILLIAM SOUND OPERATIONS MANUAL TO REQUIRE INCREASED STANDARDS FOR INITIAL QUALIFICATION AND RECERTIFICATION OF ALL WATCHSTANDERS.

- INSTALLED TWO ADDITIONAL AUTOMATIC RECORDING PLOTTERS FOR ALL THREE OF THE VTC RADAR INDICATORS. THESE PLOTTERS ALLOW COMPLETE TRACK RECONSTRUCTION AND A QUALITY CHECK ON RADAR OPERATORS.

- ESTABLISHED WEATHER RESTRICTIONS CLOSING THE PORT TO TANKER TRAFFIC. THESE RESTRICTIONS ALSO HAVE BEEN SUBMITTED AS PART OF A PROPOSED REWRITE OF VTS REGULATIONS.

- ESTABLISHED A PROCEDURE TO CREATE A TEMPORARY "ONE-WAY ZONE" BASED ON ICE CONDITIONS IN THE TRAFFIC SEPARATION SCHEME. THIS PROCEDURE WILL PROHIBIT A DANGEROUS MEETING SITUATION IF SIGNIFICANT ICE BUILDUP IS PRESENT.

AS A RESULT OF OPA 90, THE COAST GUARD WILL SOON CONTRACT FOR DESIGN AND CONSTRUCTION OF A "DEPENDENT SURVEILLANCE SYSTEM" FOR SHIPS OPERATING IN PRINCE WILLIAM SOUND. ONCE INSTALLED, THIS "HANDS-OFF" SYSTEM PERMITS AUTOMATIC TRACKING OF THE VESSEL WITHOUT ACTIVE INTERVENTION BY THE VESSEL'S OPERATORS. THE SYSTEM WILL UTILIZE THE GLOBAL POSITIONING SYSTEM (GPS) IN A DIFFERENTIAL MODE TO ESTABLISH A VESSEL'S POSITION. THE SYSTEM RELIES ON A SHORE-BASED RECEIVER THAT OBTAINS ITS POSITIONS FROM GPS SATELLITES. A COMPUTER COMPARES ITS POSITION FROM THE SATELLITE TO ITS KNOWN POSITION, AND CALCULATES A CORRECTION. A RADIO TRANSMITTER THEN BROADCASTS THE CORRECTION TO THE VESSEL SO IT CAN REFINE THE POSITION DETERMINED BY ITS OWN GPS RECEIVER, THUS MAKING IT MORE ACCURATE. AFTER DETERMINING ITS POSITION BY THIS HIGHLY ACCURATE SATELLITE INPUT, THE VESSEL WILL TRANSMIT THIS POSITION, ALONG WITH AN IDENTIFICATION CODE, TO THE VTS, WHERE IT WILL BE DISPLAYED. THE SYSTEM WILL AUTOMATICALLY TRACK THE VESSEL AND SOUND AN ALARM WHENEVER IT ENTERS OR DEPARTS A DESIGNATED AREA, EXCEEDS A PREDETERMINED SPEED, OR ALTERS COURSE

MORE THAN A PRESET LIMIT. THE NAVIGATION SYSTEM TO BE SELECTED WILL OPERATE 24 HOURS A DAY IN ALL WEATHER CONDITIONS AND PROVIDE COMPLETE COVERAGE OF THE SOUND.

DIFFERENTIAL GPS, IN A DEPENDENT SURVEILLANCE SYSTEM AS AN ADJUNCT TO RADAR, WILL PROVIDE A NEAR TERM, COST EFFECTIVE SYSTEM FOR VESSEL MONITORING AND TRACKING IN PRINCE WILLIAM SOUND. THE COMPLETION DATE IS ESTIMATED TO BE 1 OCTOBER 1992.

ALSO RESULTING FROM OPA 90, A DRAFT OF THE TANKER ESCORT REGULATIONS AND PILOTAGE CHANGE REGULATIONS FOR PRINCE WILLIAM SOUND WAS COMPLETED BY COAST GUARD MARINE SAFETY OFFICE VALDEZ IN OCTOBER 1990. APPROXIMATELY 50 OTHER REGULATION PACKAGES ARE BEING DEVELOPED.

OIL SPILL PREPAREDNESS

SINCE APRIL 1989, ALYESKA PIPELINE SERVICE COMPANY HAS BEEN EXTREMELY ACTIVE IN OBTAINING AND PRE-STAGING OIL POLLUTION PREVENTION AND RESPONSE EQUIPMENT. THESE INCREASES ARE BASED ON THE INITIATIVE OF THE COMPANY OR STATE REQUIREMENTS FOR AN OPERATING PERMIT. THE ALYESKA OIL SPILL CONTINGENCY PLAN HAS BEEN WRITTEN UNDER THE REVIEW OF THE STATE OF ALASKA, THE REGIONAL CITIZEN ADVISORY COUNCIL AND THE COAST GUARD. ONE OF THE MOST SIGNIFICANT CHANGES TO THE CONTINGENCY PLAN DEVELOPMENT PROCESS IS THE NEW PERFORMANCE STANDARD IMPOSED BY OPA 90 AND

ALASKA STATE LEGISLATION. THESE STANDARDS REQUIRE THE OWNER/OPERATOR TO DEVELOP A CONTINGENCY PLAN BASED ON A WORST CASE SCENARIO AND IDENTIFY THE SOURCE OF CLEANUP EQUIPMENT; FOR SHIPS, THIS WOULD BE THE COMPLETE DISCHARGE OF THE CONTENTS OF THE VESSEL IN ADVERSE WEATHER. THE STATE OF ALASKA HAS FURTHER DEFINED THAT STANDARD TO SPECIFICALLY REQUIRE THAT THE PLAN BE DEVELOPED TO RECOVER A SPILL FROM THE WORST CASE SCENARIO WITHIN 72 HOURS.

ALYESKA HAS INSTITUTED OTHER MEASURES SUCH AS BOOMING ALL TANKERS AT THE BERTH (REQUIRED BY THE COTP); SCREENING CREW MEMBERS WHO HAVE GONE ASHORE FOR ALCOHOL USE; AND GIVING TANKER CAPTAINS BREATHALYZER TESTS ONE HOUR BEFORE SAILING.

THE LIST OF OIL SPILL RECOVERY EQUIPMENT IMMEDIATELY AVAILABLE IS VERY LONG, BUT SOME OF THE MOST SIGNIFICANT ITEMS INCLUDE FOUR ESCORT/RESPONSE VESSELS, ONE SKIMMING VESSEL, ONE LIGHTERING VESSEL, AND THREE LARGE CAPACITY STORAGE BARGES. THE TWO TUGS AND BARGES ARE STATIONED IN MID-PRINCE WILLIAM SOUND, NEAR NAKED ISLAND, WITH SPILL RECOVERY AND LIGHTERING SYSTEMS ABOARD. THESE UNITS ARE MANNED AND READY FOR AN IMMEDIATE RESPONSE 24 HOURS A DAY. THIS PRE-STAGED EQUIPMENT IS ALL PART OF THE "SHIP ESCORT/RESPONSE VESSEL SYSTEM" (SERVS) WHICH HAS BEEN DEVELOPED TO PROVIDE MAXIMUM SAFETY IN VESSEL NAVIGATION AND IMMEDIATE RESPONSE TO AN OIL SPILL IN PRINCE WILLIAM SOUND. ADDITIONAL

RESPONSE EQUIPMENT IS BEING ACQUIRED AND PLANS ARE IN PROGRESS TO CREATE A RESPONSE STATION IN PORT ETCHES, AT CAPE HINCHINBROOK ENTRANCE, IN ADDITION TO THE STATIONS AT VALDEZ AND NAKED ISLAND.

THE OIL-SKIMMING SHIP VALDEZ STAR HAS BEEN LAUNCHED FOR ALYESKA IN PORTLAND, MAINE AND IS CURRENTLY UNDERGOING SEA TRIALS AND COAST GUARD INSPECTION FOR CERTIFICATION. ONCE ACCEPTED, THIS 123-FOOT SHIP WILL TRANSIT UNDER HER OWN POWER VIA THE PANAMA CANAL AND IS EXPECTED TO ARRIVE IN VALDEZ IN EARLY JUNE 1991. THIS SHIP WILL [illegible] THE SHIPS AND BARGES PRESENTLY IN PRINCE WILLIAM SOUND.

ALYESKA HAS STOCKPILED BOOM AND ABSORBENT EQUIPMENT ALL OVER PRINCE WILLIAM SOUND AND HAS CONTRACTED WITH A FLEET OF FISHING VESSELS TO DEPLOY BOOM AND PROVIDE HELP WHERE NECESSARY. THESE BOATS ARE SPECIFICALLY IDENTIFIED AND REGULARLY TRAIN WITH ALYESKA TO BE PREPARED TO RESPOND IF CALLED -- ALL SPECIFIED BY OPA 90.

TODAY, ALL LADEN TANKERS ARE ESCORTED BY AN OCEANGOING TUG AND A 200-FOOT ESCORT TUG/RESPONSE VESSEL, EXTENSIVELY EQUIPPED WITH BOOM, SKIMMERS, WORKBOATS, AND TANKAGE. THIS ESCORT IS FROM THE ALYESKA MARINE TERMINAL IN PORT VALDEZ THROUGH VALDEZ NARROWS, VALDEZ ARM AND ACROSS PRINCE WILLIAM SOUND AND THROUGH CAPE HINCHINBROOK ENTRANCE, A DISTANCE OF OVER 60 NAUTICAL MILES. THIS ESCORT OCCURS AT A SPEED OF APPROXIMATELY 10 KNOTS, SLOW ENOUGH TO ENSURE THAT THE ESCORT VESSELS CAN PROVIDE RAPID AND

EFFECTIVE ASSISTANCE. THIS ENTIRE SYSTEM IS EXERCISED FREQUENTLY, AND THE TECHNIQUES AND PROCEDURES ARE CONSTANTLY BEING REVIEWED AND IMPROVED.

ALYESKA MARINE TERMINAL, SERVS, STATE OF ALASKA, COAST GUARD, AND NUMEROUS OTHER STATE AND FEDERAL AGENCIES CONDUCT -- ON A QUARTERLY BASIS -- OIL SPILL EXERCISES UTILIZING THE INCIDENT COMMAND SYSTEM (ICS). ALYESKA, THE ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION (ADEC) AND THE COAST GUARD EXERCISE THE UNIFIED COMMAND STRUCTURE AT ALL DRILLS. THE MOST RECENT EXERCISE OCCURRED ON FEBRUARY 22ND WHEN ALYESKA CONDUCTED AN ACTUAL BOOM DEPLOYMENT EXERCISE WITH THE LOCAL FISHING VESSEL FLEET IN RESPONSE TO A SIMULATED 300-BARREL SPILL.

THE PRINCE WILLIAM SOUND REGIONAL CITIZEN ADVISORY COUNCIL (RCAC) HAS BEEN EXTREMELY ACTIVE IN WORKING WITH ALYESKA, STATE OF ALASKA, COAST GUARD AND OTHER FEDERAL AGENCIES TO IMPROVE THE MARINE TRANSPORTATION SYSTEM IN PRINCE WILLIAM SOUND. THIS GROUP, THOUGH NOT YET FORMALLY RECOGNIZED UNDER OPA 90, MEETS THE INTENT AND PURPOSE AS DESCRIBED AND AUTHORIZED BY THE LAW. THE CITIZENS OF PRINCE WILLIAM SOUND COMMUNITIES MEET REGULARLY AND HAVE A PROCESS TO MAKE THEIR CONCERNS KNOWN AND PROVIDE INPUT INTO THE TRANS-ALASKA PIPELINE SERVICE MARINE TRANSPORTATION SYSTEM AND THE OIL SPILL CONTINGENCY PLAN.

ALTHOUGH IT HAS NOT FORMALLY REQUESTED RECOGNITION UNDER THE LAW, THE "VALDEZ MARINE OPERATIONS COMMITTEE" IS EFFECTIVELY IN PLACE AND OPERATING. IT IS PRESENTLY COMPRISED OF (1) ALYESKA MARINE TERMINAL, (2) A REPRESENTATIVE OF THE PRINCE WILLIAM SOUND TANKER ASSOCIATION (PWSTA), (3) A REPRESENTATIVE OF THE STATE OF ALASKA DEPARTMENT OF CONSERVATION (ADEC), (4) THE SOUTHWEST PILOTS ASSOCIATION, AND (5) THE COMMANDING OFFICER OF THE COAST GUARD MARINE SAFETY OFFICE AT VALDEZ. OTHER INTERESTED GROUPS OR AGENCIES, SUCH AS THE [illegible], ARE REGULARLY INVITED AND ATTEND THESE MONTHLY MEETINGS, DEPENDING ON THE TOPICS FOR DISCUSSION. THIS COMMITTEE'S MAIN OBJECTIVE IS TO IMPROVE SAFETY IN THE MARINE TRANSPORTATION SYSTEM IN PRINCE WILLIAM SOUND BY RECOMMENDING IMPROVEMENTS TO THE OPERATIONS OF SERVS, OVERSIGHT OF SERVS SPILL DRILLS AND EXERCISES, AND OTHER AREAS OF MUTUAL CONCERN.

THAT CONCLUDES MY OPENING STATEMENT. I WILL BE HAPPY TO ANSWER YOUR QUESTIONS.

The CHAIRMAN. Thank you very much, Admiral.

You are the Commander for the clean-up in Alaska, you say?

Admiral CIANCAGLINI. Yes, sir, I am.

The CHAIRMAN. Can you give us the status of the fishery in Alaska?

Admiral CIANCAGLINI. Based on the information that I know of, sir, as Senator Murkowski has stated, the impacts of the oil onto the fishery industry as far as I know has not occurred. It has been minimal, if anything.

Last year, the pink salmon returned in record numbers to Prince William Sound. And with regard to the herring, the herring season, about 8,000 tons was recovered in approximately 20 minutes, a 20-minute season.

So, from a fisheries point of view, as far as I know, the Sound is in good shape.

The CHAIRMAN. Do you know anything about the bird life? Perhaps Mr. Turner ought to speak to the bird life. I will get to him in a minute.

Let me just ask you—are you satisfied that another Exxon Valdez can be avoided, with a high degree of confidence?

Admiral CIANCAGLINI. That is an interesting question, Mr. Chairman. I cannot guarantee that another Exxon Valdez will not occur. All I can state is the fact that all of us have placed an enormous amount of effort in trying to prevent that from recurring.

With regard to the increase in the vessel traffic systems that I just enumerated on, and plus efforts by everybody in the communities to respond to a spill if it does occur—to ensure that whatever impact is felt by the environment that it is minimized.

The CHAIRMAN. The danger, you believe, is a lot less, I assume?

Admiral CIANCAGLINI. Far less, sir.

The CHAIRMAN. Right. You think it is an acceptable risk, now?

Admiral CIANCAGLINI. Oh, absolutely, sir.

The CHAIRMAN. All right.

Mr. O'Neal, I understand that the exploration phase in ANWR, just as in Prudhoe Bay can be done in the wintertime on ice roads. And if you do not find oil in commercial quantities, that you can move off and leave no scar on the environment there, at all. Is that correct?

Mr. O'NEAL. That is my understanding, Mr. Chairman. I have also been told that here is a potential for using a lot of the technology now that we used in the outer continental shelf drilling, by using a pad and helicopter approach. And perhaps in some cases, even now being able to eliminate an ice road.

The CHAIRMAN. Admiral Watkins, in your testimony the other day, there was some conflict on CAFE standards. Now, Senator Wallop and I have CAFE standards in our bill. We believe that it is part of the picture. It is not part of the National Energy Strategy.

But there was some disagreement as between the amount to be saved by the Bryan bill, actually, by the year—I think—2001. I believe the estimates went from 2.8 million barrels a day from the proponents of the Bryan bill to your figure of 500,000 barrels a day.

But let me ask you this. If the Bryan bill were enacted, what happens to the consumption of gasoline? Do you recall that figure?

Secretary WATKINS. Well, I am not sure, Mr. Chairman, what you are driving at. We did have a difference in our approach, which I have outlined for Senator Wirth, who asked a question for the record.

I think that would better be discussed during the CAFE hearing. Because I think then it is going to be very clear.

The CHAIRMAN. Well, I think what I am getting at is whatever the figure is, whether it is 2.8 million barrels a day, or 500,000 barrels a day, that is from an increasing base. In other words, there are more people, there are more automobiles, there are more miles driven.

Secretary WATKINS. Our analysis definitely takes into account more people, more automobiles. It takes into account the special forces that drive us towards a higher mile-per-gallon, anyway, if we did nothing else. Because the Automobile Industry has other objectives that they have to meet. Obviously they have to stay competitive. So the National Energy Strategy projections are that without doing anything, you would move automobiles up to about 33 MPG; light trucks up to 24 MPG.

The CHAIRMAN. Well, I understand that, but, I mean the point is that the line, if unrestrained, would go up. It is not that you are saving 2.8 million or 500,000 barrels a day off of a flat line.

Secretary WATKINS. No, sir.

The CHAIRMAN. That fuel economy line is going up because there are more people, more automobiles, more miles driven.

Secretary WATKINS. The line is going up. And this is where we have a lot of apples and oranges comparisons between the various analyses. And we believe our analysis which shows that just that difference alone, that rising fuel economy baseline, accounts for half of the errors, the differential between the calculations at 2.8 million barrels a day by the year 2005 and our 500,000 barrels—that is half of the differential right there alone. Because we believe, and we have not seen their data, but we can only surmise that they have used a 27.5 average baseline and taken credit for the entire leap to the year 2005, which we think is quite unrealistic.

The CHAIRMAN. So, if the point is if we do everything we can, including CAFE, which we want to do as part of this bill, it is not going to get us off imported oil.

Secretary WATKINS. No way, sir. You are still on oil, too. And as you know, the National Energy Strategy goes after alternatives to oil. This is where we think the real payoff is. We think we can get 3 million barrels-a-day equivalent against that 1 million barrels a day in 2010 because of the variety of other initiatives in the NES that have incentives for the first time for the American industry to go after alternative fuels by lifting the CAFE cap above the 1.2 mile per gallon limit that is now there, for example, against alternative fuels.

So we think the package that we have is a very good package. And we do address CAFE in the sense that we are looking for the National Academy to help us out, once and for all, with a new blend of elements of the formula, which include highway safety.

The CHAIRMAN. And that will be ready by June?

Secretary WATKINS. By June, yes, sir.

The CHAIRMAN. Mr. Turner, tell us about what has happened to the caribou herd in Prudhoe Bay.

I use the figure that it has tripled since drilling has begun. Is that correct?

Mr. TURNER. Mr. Chairman, there are several caribou herds, as I understand, across the North Slope. Some of those, are, of course, monitored very closely and under the jurisdiction of the State of Alaska, which is appropriate.

The Western Arctic Herd has increased substantially from 220,000 animals—I would have to submit a number to you—but it has gone up substantially. We have a herd——

The CHAIRMAN. Those are the ones in the center of Prudhoe Bay?

Mr. TURNER. The Central Arctic herd, I think will be most impacted, interfaced with the Prudhoe Bay. That herd is also increased from about 18,000, I think, to maybe over 20,000. And then we have the porcupine herd, which is the one most impacted by Prudhoe Bay. And that one seems to be increasing at about 5 percent a year, about 180,000 animals at this time.

The CHAIRMAN. Now, when you go up to ANWR, and I urge you all to go there, the caribou, to put it mildly, seem to exist well in connection with the roads and the drilling of oil, do they not?

Mr. TURNER. Mr. Chairman, like most large game ungulate populations, they seem to have flexibility. And of course in the 1002 report, we noted that the possible impact in ANWR would impact dispersion in some of the calving areas. And we have to be concerned about some of the insect relieved area.

But it is our feeling that the caribou will do fine, as they have in the Prudhoe Bay area. We have been conducting a lot of biotelemetry work, and that work will continue in cooperation with the Canadian Wildlife Service in the State of Alaska. But we feel we can do a good job in protecting that wonderful resource, those caribou herds.

The CHAIRMAN. What other game do you have in large numbers in the 1002 area?

Mr. TURNER. Well, Mr. Chairman, there is a—it is certainly a staging area for water fowl. We have anywhere from 20,000 to 300,000 snow geese. We find some of the coastal plane is important to denning caribou herd off the Beaufort Sea. We have a wonderful population of musk ox in the area.

The CHAIRMAN. And by the way, musk ox were killed out a number of years ago, and they have been reintroduced, have they not?

Mr. TURNER. Yes, and we have a stable herd. It seems to be increasing the numbers as the increase or are disbursing out of the refuge. But I also had the wonderful opportunity to visit that area last year, and that was my first look at a musk ox. It is a wonderful resource.

The CHAIRMAN. Now, the bird life—you know, we have tens of thousands of wells drilled in Louisiana in the coastal area. The birds do very well in connection with oil drilling, do they not?

Mr. TURNER. Mr. Chairman, I would say so. And it is one of the resources. We have some rafters in there. And water foul production. And we think that we can take a—do a good job in avoiding some sensitive areas, and mitigating the others. So I do not see adverse impact on the important bird life of the coastal plain.

The CHAIRMAN. Do you see any of the game in the 1002 area that would be adversely impacted by the kind of footprint we are talking about here?

Mr. TURNER. Well, Mr. Chairman, I am certainly committed as director of the Fish and Wildlife Service. I know the President, as the Secretary, that we take those resources and that be good stewards of them and protect the values. And so I am convinced, personally, that we can do a good job of that and protect those wonderful fishery wildlife resources, the habitat on which they depend for future generations.

The CHAIRMAN. Now, there is a nice fishery, but there is no commercial fishery, is there?

Mr. TURNER. No, it is my understanding that there is certainly some subsistence use of the char, and maybe a little bit of the arctic sisco that use the coastal area.

The CHAIRMAN. But that is a sport fishery and subsistence?

Mr. TURNER. Yes, sir, and there is——

The CHAIRMAN. It is really a pretty small fishery and——

Mr. TURNER. There is some stream fishery, it is interim. It is seasonal, as some of those fish in the wintertime move into those stream areas that are out in the Beaufort Sea. In the summer they move back through the shallows and into the streams in the winter.

The CHAIRMAN. And the char is an anadromous fish, is it not?

Mr. TURNER. Yes, Mr. Chairman.

The CHAIRMAN. All right.

Senator Wallop.

Senator WALLOP. Thank you, Mr. Chairman.

John, I may just follow up on it. I would ask, if your schedule permits, that you stay in the room and listen to the testimony of Mr. Matz and Mr. Yeager. And then, if you would, comment on it in writing to us afterwards. And if time will not permit, return to the desk.

But I think that they have some statements in there that you would contest.

Let me ask you this. Is there anything about the Johnston-Wallop bill, S. 341, that you would have us change that we might strengthen your hand in protecting the resource that you are responsible for?

Mr. TURNER. Well, Mr. Chairman, what I would hope is the opportunity in Interior, and with the committee, and with the sponsors, to have a continuing dialogue on specific sections of the bill, what suggestions we might have at the Fish and Wildlife Service and the Department of the Interior. And I welcome that opportunity and thank you.

Senator WALLOP. On your examination of it, so far as it has proceeded, though, is there anything in the Endangered Species Act or any other act that is within the responsibility of the Fish and Wildlife Service which would cause you to take issue with any provision in the Johnston-Wallop legislation?

Mr. TURNER. Mr. Chairman, overall, I think we have good protections. We are committed to use the 1002 report as a programmatic legislative, environmental statement which I think is sound, to take us to the development of leasing regulations.

And as the committee is aware, we are committed to comply with NEPA, the Endangered Species Act, the Historical Preservation Act, and compliance with the ANILCA law, in site-specific programmatic from thereon.

The only thing I might point out, Mr. Chairman—I prefer the approach—in the bill before you. You have found that oil and gas is compatible with the purposes of the Arctic Wildlife Refuge. I personally would like to see it exempted from the compatibility test, because of my concern that we set a precedent for other refuges and other use activities, if the Congress finds that that is a compatible use.

I would prefer that we exempt it from the compatibility test in this special case.

Senator **Wallop**. We may be able to do that. But I would observe—and I will get to you, Mr. O'Neal, in a second—I would make the observation that while the Audubon Society is quite explicit on their opposition to production in wildlife areas, they seem to have not gotten the same kind of opposition to the production in their own wildlife refuge and reserve. They seem to be able to produce it quite compatibly there.

Mr. **Turner**. I am aware that—Mr. Chairman, I am—and certainly it should be pointed out that we do have quite extensive oil and gas operations in the National Wildlife Refuge System in other parts of the country.

Senator **Wallop**. For purposes—I mean, the fact is that if you do it purposely, with the idea in mind of protecting the resource, that in most instances it can be done. And in those that it cannot, you do not.

Mr. O'Neal, you were seeking to comment?

Mr. **O'Neal**. Yes, sir, and if I could be so bold, I think that one of the things we would like to see that would be necessary for S. 341 would be a definition of "significant adverse affect."

Senator **Wallop**. Well, maybe you would like that and maybe you would not.

Sometimes when the lawyers get to defining, the problems get worse, not better.

Mr. **O'Neal**. We would be happy to offer the definition.

[Laughter.]

Senator **Wallop**. Admiral, let me just quickly examine a couple of things with you.

The United States is no longer in a position to influence the world price of oil. It can mitigate it, but it cannot really influence it. Is it that——

Secretary **Watkins**. Yes, sir, that is correct.

Senator **Wallop**. So that the arguments, and the question by Senator Bradley, what happens if the OPEC decides to double the price of oil? There is not much we can do to resist them. But of what consequence would ANWR or other U.S. production be if the price of oil were to double?

Secretary **Watkins**. Well, obviously they would share in the world-wide spot-oil price in the futures market that we would not control. It would be generated outside. The price of oil would go up.

We would have an import situation that would be more costly to us. We would also have more revenues flowing into whatever split comes out of the arrangement.

Senator WALLOP. But absent whatever production we have, that import situation is yet more costly, is it not?

Secretary WATKINS. Absolutely. And this is why we keep saying we have to go both ways. We have to go for demand reduction, through a variety of efficiency, conservation, and other measures that we have in the National Energy Strategy. We also have to go on the production side, if, in fact, we want to minimize the shock to the Nation—the economic shock to the Nation—for any future situation.

Now, we have already improved on that since the 1970's. We can improve some more. And the National Energy Strategy takes us in the direction to, again, do it. But still, the need to do both conservation and enhanced oil production is essential in our opinion.

Senator WALLOP. We had the witness from, representing in part, the National Resources Defense Council yesterday, who basically said that they did not want any more production, and that natural gas was to be a bridge to some unknown future fuel.

Secretary WATKINS. Well, that is interesting, but we have to get natural gas by drilling. And we have to go into the 10 trillion cubic feet that are now sitting off the non-restricted areas—for example, off North Carolina. These are big fields, 70 percent of which are going to be natural gas.

Now if we have natural gas for vehicles, natural gas for base electricity load, natural gas heating our homes, natural gas for industry, we do not want to be importing natural gas either. So somewhere we have to understand that gas comes from wells.

Senator WALLOP. Then the last question is, even with the production of that natural gas, there will still—for the foreseeable future—be some need in the U.S. economy and the U.S. energy mix for oil. And so would you comment on the so-called 200-day scenario, since it only produces 200 days we have no need of it?

Secretary WATKINS. Well, I tried to address that in my statement, Senator Wallop.

Senator WALLOP. You touched on it. But I think it is worthy of isolating.

Secretary WATKINS. And I really think that those kinds of specious arguments would have wrecked this country's economy a long time ago, if they had gotten away with it.

We are not talking about 200 days to fly. We are talking about something that will extend the North Slope and ANWR life to at least 2025. We are talking about 35 years.

And in the past, our estimates of closure on those fields have been exaggerated—that is, they have always gone longer. Because there will be other Beaufort Sea finds, there will be other openings up there in Alaska that will further extend that life.

But the beauty of the ANWR-North Slope relationship is that you are not going to have much more life in the Alaska field beyond 2005 to 2009. It dies with 300,000 barrels a day because of the technical and economic limits on getting it down to the Port of Valdez, through the pipeline. So we really have to be realistic that we are not just talking about ANWR, we are talking about ANWR

North Slope, Alaska. The combination is very powerful in terms of our ability to transition ourselves away from oil, principally in the transportation sector, by alternatives means.

And this gives us time to do that—realistic time to do it. Not some theoretic, mythical time that does not exist. We have 185 million cars on the road that need oil right now. We hope to wean them away to alternative fuels over a lot of this next decade. But for the foreseeable future, we have a lot of oil that has to flow into this country's economy.

Senator WALLOP. So, in effect, then, that ends out what could be described as a conservation measure to get the most efficient use out of that portion of Alaskan oil which is already in production, and that commitment to the pipeline which has already been built.

Secretary WATKINS. Yes, sir, that is correct. And obviously, I know that one of the other members was asking the question, could we not do this all by conservation? And the answer is, we have to do both. We have a very significant efficiency and conservation package in the NES. It is not the normal, that everybody likes to see, when they do not have their annual line item and the pet rock that goes in there. But in combination, all of these things are very powerful, and lead to large reductions.

And I show you on the one chart, that just by 2010 alone, we are down by 3.4 million barrels a day by a variety of initiatives, and up by 3.8 in production. The combination is very powerful towards energy security. And so I think it is not a matter of what do you want, one or the other. We want them both. And I think that is very critical in all of this.

And it does seem a bit paradoxical that we are using, perhaps, the revenues of oil to find alternatives to that very source. And I think that makes a lot of sense, and I think that will be quite palatable to the American people.

Senator WALLOP. Thank you, sir.

Thank you, Mr. Chairman.

The CHAIRMAN. Senator Bradley.

Senator BRADLEY. Thank you very much, Mr. Chairman.

Mr. Secretary, the problem is dependence on fossil fuels. Is there a better way to reduce dependence on fossil fuels than raising the price of fossil fuels?

Secretary WATKINS. Well, I am not sure why we are going after fossil fuels. I think everybody pretty well agrees that natural gas is good. Natural gas is clean. Natural gas is what we need. So when we throw it in there, I certainly am not going after fossil fuels. And my feeling is that we have to be sensitive to greenhouse gas generation for global climate change issues, if, in fact, we eventually show some scientific linkage between global heating and greenhouse gas.

But other than that, I am really not sure why you are going after fossil. I do think we have to get the impact of oil, the oil market on this economy in this country to the point where it does not worry the American people. And I think that is certainly one clear objective.

Clean coal is another issue. And natural gas is a separate, all by itself. And while it is a CO2 generator, it is a very efficient, very effective, and very clean fuel from an environmental point of view.

And so I am not sure I know what your question is.

Senator BRADLEY. Is there a better way to reduce consumption of oil, a better way, than increasing price?

Secretary WATKINS. Yes, finding alternative fuels that are competitive. And we think we have in the Energy Strategy combination of things that will do just that.

Senator BRADLEY. At what price of oil?

Secretary WATKINS. At the price listed in Appendix C of our report, which shows an escalatory price of about 4 percent per year between now and the year 2000, which is something like $26 to $28 in constant 1989 dollars.

Senator BRADLEY. Of course, that is what the 1980 Energy Plan was based upon, too—a price of $40. But it never happened. And therefore, when we have plans laid out to develop alternative fuels, it seems to me it is very difficult to make those investments, unless you are sure of what your price might be.

I mean, we passed a giant synfuels bill, the premise of which was oil was going to be $50, $60 per barrel. It was not. When you do not control all the production, you cannot be sure of what the price is going to be. That is the whole thrust of this.

Therefore, you have to intervene to assure what price is.

Secretary WATKINS. That is true, but no one is going to assure what the oil prices are going to be 10 years from now. There is no guru around town that will do that. But they have assembled with us, with the Council of Economic Advisors and others, to find a reasonable ramp on which we can all expect the averages to come out over the 10-year period.

They may not in any 1 month, they may not in any 1 year. But there is going to be a general movement up in price at about those figures, and it seems to me that that is not an unreasonable planning figure, recognizing the what-if could be extreme.

But I think one of the benefits that will come out of the events in the Middle East will be a different relationship between responsible Arab League members—and I believe that clearly includes Saudi, who now really holds the key to variable flow. And I think that they are a responsible nation. I think they are now closer to all of the coalition nations that were involved with them. I think there is going to be a new kind of understanding about OPEC's relationship. And I am more optimistic than many others who say we are going to have a huge drop in oil, and then it is going to go way up.

I question the validity of that. And I think we are going to be in better shape to predict oil prices between now and the year 2000 than we certainly were between 1980 and the year 1990, which was a very volatile period of time, and which we really did not have our act together in a variety of ways.

Senator BRADLEY. The German contribution to the Persian Gulf War, since you raised it, is about $11 billion. They have paid for that contribution by raising their gasoline tax 67 cents per gallon. Is there any lesson there for us?

Secretary WATKINS. No, sir, I do not think so. It is interesting, but it is not a lesson in this country. I do not think that we——

Senator **Bradley**. So that as the Secretary of Energy, looking at it from an energy policy standpoint, you would absolutely oppose any increase in the cost of oil that would be in the form of——

Secretary **Watkins**. To be enforced by the United States?

Senator **Bradley**. Yes, it would be in the form of.

Secretary **Watkins**. That we would demand $25 a barrel?

Senator **Bradley**. In the form of a tax?

Secretary **Watkins**. In the form of a tax, I am——

Senator **Bradley**. Or an import fee.

Secretary **Watkins**. I am ultimately opposed to a forced tax that would hurt the little people in this country far more than anybody else. Also, raising price would be inflationary. I think it would be a drag on the economy—when we can solve it with our best strength in this country. The pearls we have in our crown include research, technology, developing alternatives, and letting the American people alone. Give them a break.

Senator **Bradley**. Okay, so you are opposed to it because it would hurt the little people.

Secretary **Watkins**. Well, I am opposed to it in general terms when we have alternatives. Why would we want to tax our people? They are taxed enough. And I do not see anybody standing up here wanting a dollar tax which will give you 1 million barrels a day, or 50 cents giving—we had enough time with 5.1 cents a gallon.

Senator **Bradley**. I am trying to elicit your views. And you are very clear on why you are opposed to the tax—that it would hurt the consumer. We now have a proposal——

Secretary **Watkins**. Lower-income people, too, Senator Bradley. And that has been analyzed many, many times.

Senator **Bradley**. We now have a proposal for ANWR, that if it comes in, will produce another 400,000 or 500,000 barrels a day.

Secretary **Watkins**. Well, that figure is not correct. That figure should be 850,000 barrels a day at the 3.6 billion barrel level.

Senator **Bradley**. Fine, 850,000 barrels a day.

Secretary **Watkins**. Right.

Senator **Bradley**. So that now we would be importing not 8 million barrels, but 7.2 million barrels.

OPEC, the cartel, raises the price. And it raises the price on all of those 17 million barrels we consume.

How does that help the little people?

Secretary **Watkins**. Well, that raising the price does not help the little people. From their point of view, any raise in price is inimical for their expectation.

Senator **Bradley**. And ANWR will not affect that at all.

Secretary **Watkins**. It will affect the fact that you are not going to have to import. If you think the American lifestyle will suddenly change overnight because it goes to $30 a barrel, we just saw that it would not.

Senator **Bradley**. But in terms of the little people that you were so concerned about that you did not want to raise the tax—if OPEC raises, it does not affect—it only increases the cost for them. Is that not correct?

Secretary **Watkins**. That is true. But when we say if, and OPEC is somehow going to sit there as a villain now in the post-Middle East crisis period, or without any kind of relationship with the

United States and arbitrarily set this limit—particularly Saudi Arabia—I really doubt that that is a good what-if. I think we can be better economists than that between now and the year 2000.

Senator **Bradley**. Well, you can trust OPEC if you would like. I am not.

Secretary **Watkins**. I am not trusting OPEC. I am just saying I do not think we need to sit here and say what if they raise it, what if they lower it—why do we get into that discussion? I have no indication that they are not sincere about stabilizing oil prices.

Now we may not like the way it is always done. But if they come out somewhere around $21, plus or minus a couple of dollars-a-barrel, that is going to be accepted over here. If it goes to $30, it is not going to be. If it goes to $10, we are going to worry about how it is going to affect our own oil production.

Senator **Bradley**. Is the question not, though, doing nothing, letting OPEC raise the price, they get all of that. Are we preemptively raising the price through a tax. We get that, and could use that revenue to help the little people pay for it.

Is that not the choice?

Secretary **Watkins**. I cannot say it any better. I am not an economist, I am an admiral in the Navy who does not know a lot about the—all the issues in the economy. But I personally find it offensive to, that every time we want to solve something we want a tax.

Senator **Bradley**. I am not advocating that today in this committee hearing. I am trying to try to find the best way.

Senator **Wallop**. Bill, would you yield for a question?

Senator **Bradley**. Sure.

Senator **Wallop**. Whether or not we raise the tax, would that prevent OPEC, if they wish to, from raising the price and doubling the pain and affect on the people of America?

Secretary **Watkins**. Absolutely not.

Senator **Bradley**. But the mirror of your argument is then valid. If we raise the price, we would be consuming less—just as you argue if we produce more, we will be consuming less with OPEC.

Senator **Wallop**. I suggest that the studies show that you have a lot more in mind in raising that price than you think before you affect the habits of people.

The **Chairman**. If the Senator would yield, back in the 1970's—motivated by the same arguments that you are making—I proposed a 50 cent gasoline tax, 10 cents a year. I was actually going to rebate that back to the taxpayer through the Social Security system.

I looked back for my environmental friends to support me. They were nowhere to be found. But there was a firestorm of criticism. If there is a groundswell of support out there today for a gasoline tax, I do not see it. And this is one Senator who is not going to be for a gasoline tax—you can write that down.

Senator **Bradley**. Well, Mr. Chairman, I would only say that the choice might be that—raising the price so that we get the savings—or following a policy which we might call "In Fahad We Trust."

[Laughter.]

Senator **Bradley**. Which, I do not think—based on the history of the last decade—is a policy that I think is advisable for the country.

If we could, I would like to ask the Admiral a question.

Mr. **Moore**. We were simply told to answer your question.

You ask about what would the effect be of taxing and giving the money back. We have studied that. Our economists have. We are more than happy to share it with your staff.

If you tax them and give the money back, over a 20-year period, our figures show a $570 billion loss in present value to the economy. It does not work dollar for dollar.

Senator **Bradley**. What is the tax?

Mr. **Moore**. Whatever tax level you want to put it at. I can give you a level we did. $1 a gallon is the one we looked at; 67 cents would not cut that figure too far down from $1. And if you would like to have your staff look at that analysis, I would be glad to show it to them.

Senator **Bradley**. Elasticities are always a very interesting subject to pursue.

Mr. **Moore**. Taxing never helps an economy, Senator.

Senator **Bradley**. So we will take a look at whatever you provide us, as opposed to simply taking your statement—because you have made it—as valid.

Admiral, could you tell me? You said Alyeska is now doing some more things. What are they doing?

Admiral **Ciancaglini**. With regard to the——

Senator **Bradley**. With regard to actions that they might be taking to avoid the problem we had in Valdez, with the Valdez.

Admiral **Ciancaglini**. In Valdez.

You have a person coming in that will be speaking for Alyeska shortly. But based on my knowledge, Alyeska is working closely with us and with the State of Alaska on, number one, the exercises, as I said. Where we are actually deploying the vessels and boom, working closely with the fishermen. They are deploying the boom. We are exercising the incident command post when we do these exercises.

They have stockpiled approximately 35,000 feet of various types of booms to deploy. They have five ships—escort response vessels. They have barges—I think each with a capacity of 143,000 barrels to contain oil. They have skimmers with a capacity of at least 12,500 barrels per hour. They have a barge and a couple of tugs located out at Naked Island in Prince William Sound to respond to a spill. And also they are planning on putting a similar type of a network of a barge and a couple of tugs out at Port Etchies out in Prince William Sound. That is just a few, as a starter, sir.

Senator **Bradley**. My time is up. Admiral, I want to thank you very much for that very lengthy answer. And I might ask you to provide some information for the record, if you could, on other actions about Alyeska.

Admiral **Ciancaglini**. Yes, sir.

[The information requested was not received at the time the hearing went to press.]

The **Chairman**. Thank you, Senator Bradley.

Senator Murkowski.

Senator MURKOWSKI. Thank you, Mr. Chairman.

You know, I get kind of exasperated with the projections. Nobody knows what is in ANWR. We will not know whether there are 0.5 million barrels that we can pump out, or 2 million barrels or anything, unless we initiate exploration.

But the question has been asked, what are you going to do for the little people? Well, there is an estimate that the nationwide job impact, direct and indirect be about 735,000. It is estimated there would be 22,000 in the State of New Jersey.

So when we are talking about the little people—I will cite this.

Senator BRADLEY. Where are they going to be?

Senator MURKOWSKI. They will be created in New Jersey, if the ANWR coastal plain is opened to oil and gas development. And I will provide you with that, Senator.

Senator BRADLEY. Where?

Senator MURKOWSKI. Because it is a reflection of various companies that are involved in manufacturing gear that would be used in the project. In fact, the last time around, nearly $1 billion was expended throughout the United States. And 49 of the 50 States were active.

And as a consequence of that, when you say what are you doing for the little people, you are stimulating America's economy. You are providing an additional tax base. And you very well could increase substantially the estimates of recoverable oil which are currently 800,000 barrels a day. Who would have thought we could pull 2 million barrels a day out of Prudhoe Bay for some 20 years?

But rather than do just strictly conjecture, what I would like to ask the Admiral is, it is estimated in the Johnston-Wallop bill that revenue projection off lease sales could total about 3.1 billion. If there were a revenue split of 50/50, half of that would go to the State, and the other half would go to the Federal Government, of which approximately $500 million would go to the Treasury with another $1 billion into the Conservation Fund, which is in the Johnston-Wallop bill.

It is estimated that funding for 66 percent of all the alternative energy development, research, as well as funds for conservation, come out of ANWR. Now, Admiral, it seems like everybody—including Senator Johnston, Senator Wallop, and yourself—have indicated that ANWR is the cornerstone, the keystone, if you will, of energy policy.

Now can this Nation have an energy policy without ANWR, in your opinion, if, indeed, we have this situation? Yes, we want an energy policy. But say we do not want ANWR as a part of it.

Secretary WATKINS. I think it would be a tragic mistake to leave ANWR out of the national energy policy. I do not understand how it would make any sense. Then would we leave OCS, oil and gas, and those targeted areas that are not restricted? Where would we get the revenues to do all of the incredibly important work we are finding in alternative fuels to wean ourselves away? I do not understand all that.

I just merely think that we have, in ANWR, a very key element of the energy strategy. We are very fortunate that God gave us the resources there in Alaska. And I think the combination of North Slope plus ANWR is a very powerful, transitional mechanism—

both from the economic point of view, as well as the energy point of view. And if we really work hard to get serious about alternatives to oil, and get diversified products out there, which is the American way of doing business.

Senator **Murkowski**. Well, can we have it both ways? Some of my colleagues are obviously opposed to ANWR. But they want an energy policy.

Secretary **Watkins**. Well, those are the same people that like electricity, but they do not like fossil and nuclear. If you take ANWR out for some reason, and I do not know why this would be done, because it is such a central point in our balance of enhanced oil production in this country, and demand restraint against the use of oil, it seems to me that we would be throwing away a tremendous opportunity.

Now, would any other thing be useful in the absence of that? Probably, deregulation, a number of things in here—would that make us happy? No. In fact, I am not at all sure—and I have not discussed this with the White House—but I believe a National Energy Strategy without ANWR is a veto-able issue with the President. I think it is that important.

So I do not see leaving out ANWR as being a casual thing we can do, and have any kind of viable energy strategy that would make any sense at all.

Senator **Bradley**. Would the Senator yield, just on that point?

Senator **Murkowski**. Yes, I will yield.

Senator **Bradley**. As equal revenues that you are going to get from ANWR made up a 2 cent gasoline tax equal the same amount of revenues more?

Do you want to do all these other things in energy policy and you do not want ANWR, you have to go with the 2 cent gasoline tax.

Senator **Murkowski**. Mr. Chairman, I would like to ask a question of Mr. Moore. But before I do, let me pass on to my good friend from New Jersey the reference that 22,000 new jobs could be created in New Jersey, which consumes 39 million gallons of petroleum products each day. And I will have my staff give this. And we can, perhaps, debate it publicly or privately—whichever the Senator from New Jersey would choose.

Mr. Moore, tell me whether drilling in ANWR is an environmentally—can be done in an environmentally acceptable manner, and whether this is really the issue, or is the issue something else that we seem to get hung up on? Is it price? Is it—can we get there with conservation alone? You have spent a lot of time in this area.

Mr. **Moore**. Senator, I have become increasingly troubled by the ANWR debate. I wonder whether it really is a debate over whether can you drill in ANWR in an environmentally acceptable manner. And I think an awful lot of misinformation and hidden agenda has been touched on by several of the members of the panel this morning, and has crept into this debate largely unexposed.

At your invitation, last August, I went to ANWR and spent 2 days there, 1 day with a very distinguished Ph.D. representative of the Fish and Wildlife Service, which oversees that part of Alaska; 1 day looking at how we have drilled in 20 years at Prudhoe Bay, what damage has occurred, the technology we use, experiences learned; and then 1 day walking and flying over ANWR itself.

And basically, when I asked, that gentleman, that day, if we are going to have any kind of serious damage or permanent damage to ANWR if we drill there, knowing now what we know about technology and how to do it?

The answer was no.

And so I really do not think that is the issue. There is something else at issue here, that we need to really expose and talk about. This President would never have suggested or approved NES, in the National Energy Strategy, drilling in ANWR, if he thought there was going to be any kind of environmental damage. He believes himself to be the environmental President.

If you remember, last year he took OCS areas off-limits, put them off-limits, not because the Congress asked him, or because the environmental groups asked him, but because he believed, from the work of his own office, his administration, he thought there might be some possible environmental damage. And so he would not have done this.

But if you look at what is going on, what we learned up there, and experienced the technology we have, and what safeguards can be taken, I am convinced that the issue not is can you drill there in an environmentally acceptable manner? The issue really is—and this is what needs to be exposed—that there ought not be any more drilling anywhere in the United States, in any new areas for oil and gas. That is really the issue.

Now if I could, I would like to quote two pieces of testimony to back that up. One, last summer we had a hearing in Fairbanks, on August 27, 1990, on the National Energy Strategy. Dr. Larry Landry appeared representing the Northern Alaska Environmental Center.

And I asked him the question, Dr. Landry, are there any circumstances you would consider the opening of ANWR under any kind of environmental protection? And the answer was, very simply, "No—not that I could think of."

"No, not that I could think of."

Senator MURKOWSKI. My last question for the Admiral, in your opinion, what is the environmental impact associated with Prince William Sound from the standpoint of any long-term damage?

Admiral CIANCAGLINI. Based on the information that I have, and based on the information that has been made available by our scientific advisor, NOAA, very little impact damage, if at all, Senator.

Senator MURKOWSKI. Well, what do you mean "very little, if at all"?

Admiral CIANCAGLINI. I mean that that—compared to what the impact was initially to what it is now——

Senator MURKOWSKI. Is there any long-term damage that you can identify?

Admiral CIANCAGLINI. I do not know of any, sir.

Senator MURKOWSKI. Thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. Senator Domenici.

Senator **Domenici**. Mr. Chairman, let me first say, I wish I could ask the questions that I have. But I must leave at 12:00. So I am just going to ask a couple.

Mr. Secretary, as the White House, and all of those who worked with you—including economic advisor-types—talked about the effect of importing oil on America's balance of payments, we now know that it is a huge percent of this foreign balance of payments each year is oil.

Did any of them suggest that there was a significant difference, whether you sent your dollars overseas for oil or for a Toyota? Is the balance of payments not the same—one versus the other?

You know, I see everybody so worried about the balance of payments disparity with the Japanese regarding VCR's and Toyota cars. And I do not notice anybody so worried about the fact that we send all of our money to Mexico or Saudi Arabia or somewhere else. I think they are the same.

Did you hear anyone say they are different?

Secretary **Watkins**. Clearly, Senator Domenici, importing oil in this country is moving American dollars offshore. I think in the best of all worlds, we would like to be independent. We would like to have all of our oil drilled here. That is the optimum for the economy.

So clearly, as we move more and more into moving our dollars offshore, then we lose all of the associated revenues, the taxes, and everything else that might come to us. So clearly, it is not in our best interest to move in that direction. And this is what the energy strategy shows. That if we do nothing more than what we already have into law, we are going to end up with a 65 percent import dependence in 2010 instead of somewhere between 40-50 percent.

And we believe we cannot only get it down to 50, we can get it down to 40, to 45, and hold it there. And that is not a bad objective, when you consider that we are not in control of oil production.

And that looks out into the future. But it includes our ANWR and North Slope projections, as an absolute essential ingredient in that equation—or it would bounce right back up to 65 percent, which then we would be able to control. We do not see any other options that we would have in this country. So it is that critical.

Senator **Domenici**. I have one other, on the ANWR situation, that I have never seen documented—and I wonder if you have. And if you have not, I wonder if you might have somebody do this.

You know, people are saying it does not really matter, we still are going to be importing. So why would we worry about the fact that ANWR, American oil, why would we be wanting more of that? It does not make that much difference.

But it seems to me that what we are forgetting is that if we do not have that oil, we have to import it in the very typical way that we are importing oil. We are bringing in huge, huge boats full of oil. And it seems to me that there is a very significant environmental risk—and all of the risks attendant in bringing that oil are going to be there. And it is either ours and the risks attendant it there, or it is the risks of bringing it in, in the normal way that we have to bring it in today.

Is that not so and is that not very risky?

Secretary **Watkins**. Yes, sir, it is very true. And it was at the centerpiece of the discussion, as you remember, on the outer continental shelf. That people kept linking illogical events together. And clearly, OCS properly done—let us say off the California coast, and I am not talking about the restricted area, I am just talking what the past record has been—they put in only about 200 barrels of oil over 15 years in the OCS drilling. And we have between 14,000 and 24,000 barrels that nature seeps into the ocean out there every year.

So we are kidding ourselves if we think that is the source of pollution. It was linked to Exxon Valdez. Because it is nice to do that. If something is not nasty and you do not like it, then you link it to something that is nasty. And so we have gotten all mixed-up in this issue.

The energy strategy tries to say you have to do both, you have to cut back by using alternative means that we are best at. That is technology. And you have to add oil to the system, because we have no choice with 187 million cars that basically can only use oil or oil products—except for a hand-full.

Now, we will change that over this decade. And we will begin to move. And by the turn of the century we will be moving aggressively into alternatives to diversify. And then I think we are going to see this Nation be quite secure against the next oil shock. And that is where we have to go.

Senator **Domenici**. Mr. Secretary, let me ask—I looked at your proposal on behalf of the President. And the expectation is that the price of—the underlying price of oil will go up each year 4.5 percent or so.

Is it not very basic to the effectiveness of the National Energy Strategy that that data be close to real over the next decade? What if the price is substantially less? The policy works significantly less, does it not?

Mr. **Moore**. Senator, not necessarily. The technology we are working on is not based upon a particular price. The alternative fuels program is not based on a particular price, so not necessarily.

But if you are asking the question, are they assumptions used in our base-case accurate, we think they are in the mid-range.

Senator **Domenici**. Well, let me tell you, while I do not agree with Senator Bradley, because I do not think we will raise the price of oil, I do think that that answer that you just made is wrong.

I believe your national energy policy will work substantially less if the price of oil goes up 1.5 or 2 percent a year, instead of 4.

You know, when I first came to the Senate, I sat by Senator Dewey Bartlett. And I had never dealt with oil at all—even though my State was a big oil State—and he used to tell me, market price of oil has a lot to do with how much oil you produce.

You know, it took me 3 years to understand that. And now it is so basic, that obviously I state it like anyone else. I think alternate technologies are related to price, too. And I do not think you should assume that they are not. They are very much related to price.

You can invent them, but they will not be bought unless they are related to price.

Having said that, let me just ask one other question.

Mr. Secretary, in the alternative fuels for automobiles, and alternative engines, I have become very interested in that approach. Because I studied CAFE a little bit. And I am not at all sure that the Bryant CAFE standards will work. And I am thinking many of us are beginning to understand that you cannot take that much weight out of the cars, which is all expected of it—you will have little, tiny cars in about 8 years, and you will wonder who is going to buy them. So we have to do something else.

But I am worried about this: I read your report on the policy, and I do not find that you mandated the alternative engines, or the alternative sources. Yet, I really believe your savings are predicated on it being a mandate.

Secretary **Watkins**. We had quite a debate on this, and our feeling is that if we set up the mechanisms, including incentives, including the changes we have recommended in the National Energy Strategy Act of 1991 that was submitted to the Hill on March 4. I believe that we will have a natural, market-driven migration to the alternatives that we have prepared, because of the variety of things that we are doing now to incentivize the development of those alternatives.

We believe that the work we have done in the last 20 months with private industry, with business, with our national laboratories, tells us that our objectives are reasonable in there, that past research done has gotten us close enough to warrant the kind of collaborative effort we are engaged in with the three majors, a new collaborative effort with 50-50 cost sharing to find that battery that will go over 300 miles, for example.

We have in our research package $220 million of additional research focused, for the most part, on backing out oil from transportation through a variety of new turbines, engines, efficiencies and so forth, and we think all that will be competitive, and the American people will want to buy it.

So our hope would be that the way we have set it up, there are incentives in there instead of mandates.

Senator **Domenici**. Well, let me just say for the record here, I totally support the notion of dramatically increasing the research and development and finding new technologies that will apply. I do believe, and I would just ask you not because I doubt your word, but I would ask you just to do this. Would you check your energy policy numbers and, if I am right that there is some mandatory aspects to your assumptions, would you put that in the record?

I believe that is the case, but would you look at that?

Secretary **Watkins**. Yes, sir.

Obviously we are doing some things in our Federal fleet, where we are going to be moving towards compressed natural gas vehicles and some other alternatives, in the very near future, and we hope the President will very shortly sign out the Executive Order that is shown in the National Energy Strategy that deals with setting an example at the Federal level, not just in vehicular efficiency, but also in building efficiency and the other things for which we have been criticized as not having a well enough coordinated Federal policy.

So I think that you are going to see that we will be moving in that direction, but to the extent only that I know there are mandates.

Senator DOMENICI. I want you to know that I am not as opposed to mandates as some people in the White House, so I really think we are going to have to go there in lieu of CAFE's.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Domenici.

Gentlemen, thank you very much. You have been very helpful.

Our final panel of the day will be composed of James B. Hermiller, president of Alyeska Pipeline Service Company, from Anchorage, Roger Herrera, executive consultant for B.P. Exploration in Alaska, Mike Matz, who is chairman of the Alaskan Coalition, and Brooks Yeager, who is vice president for governmental relations of the National Audubon Society.

Gentlemen, welcome back, at least with some you, as a replay of previous years. We always enjoy having you back.

Why don't we alternate between the producers and the environmentalists, and start with James B. Hermiller? Due to the time, and because we want to have some time for questioning, you might try to summarize within, say, 5 to 7 minutes, and that will give us time for an exchange.

Mr. Hermiller.

STATEMENT OF JAMES B. HERMILLER, PRESIDENT, ALYESKA PIPELINE SERVICE CO., ANCHORAGE, AK

Mr. HERMILLER. Thank you, Mr. Chairman.

I have submitted written testimony, and I will have a brief statement.

I appreciate the opportunity to appear at the hearing on S. 341 to discuss the role of the Trans-Alaska Pipeline in the exploration of the coastal plain of the Arctic National Wildlife Refuge is authorized and large oil reserves are discovered.

If this were to happen, it is fortuitous that ANWR, with its prospective large oil reserves, is located so close to a major 800 mile-long pipeline facility such as TAPS. All that would be needed is a connecting line of perhaps 75 miles in length.

Alyeska supports the opening of ANWR to exploration, particularly since successful ANWR development will extend the useful life of the pipeline. Significant discoveries in ANWR will enhance our ability to produce and transport the last barrels of north Slope crude from the older fields.

Also, ANWR development will promote and enable smaller discoveries that otherwise might be uneconomic to produce and ship to the south 48.

In your invitation to testify, you raised questions related to four subject areas that I will address today. First, you ask how much oil is being transported currently as compared with past amounts, and estimates of future capacity.

The current throughput of the Trans-Alaska Pipeline System is 1.9 million barrels per day, which is close to its established throughput capability of 2.1 million barrels per day.

As for future capacity, production from existing North Slope reserves is predicted by the State of Alaska to decline over the next 10 years to approximately 800,000 barrels per day, and to less than 500,000 barrels per day by the year 2007.

Based on these estimates, by the earliest time ANWR could be in production, there would be sufficient capacity in TAPS to carry approximately 1.3 million of barrels additional oil per day.

With respect to the pipeline's current and future capabilities, I think our record speaks for itself. The pipeline has carried over 8 billion barrels of North Slope crude to users throughout the United States. It is currently transporting a quarter of our country's domestic oil production.

Moreover, TAPS has been able to handle consistently over 99 percent of the crude oil tendered by the North Slope producers. This means virtually no loss of oil production has been attributable to pipeline operations.

Second, you ask in effect whether corrosion problems would limit TAPS' ability to carry ANWR oil. Corrosion is a concern for underground pipelines throughout the world. Alyeska has had a comprehensive corrosion protection and detection program for the pipeline since it started operations in 1977. It is important to note that since start-up there has never been a leak from the mainline pipe as a result of corrosion.

To detect corrosion, Alyeska has employed sophisticated pipeline monitoring devices that are propelled through the inside of the pipeline by the flow of crude oil. These devices are known as "smart pigs".

In the course of its operations, Alyeska has diligently sought to improve the capability of "smart pigs". In 1984 Alyeska embarked on a worldwide search for an enhanced corrosion detection pig. The result was a pig that uses ultra-sound technology, which had never before been used in large-diameter pipeline. The ultrasonic pig generates wall thickness readings and can accurately detect a wall-thinning of as little as 10 percent.

Prior to this new pig, detection of corrosion required a wall-thinning in the 50 percent range, which is still the threshold detection sensitivity in the pipeline industry.

As a result of this new technology, Alyeska learned that the majority of the pipeline is corrosion-free. Only 2 percent of the total length of the pipeline is affected by corrosion, and the pipeline in those areas was and is reparable or replaceable without danger of a leak.

With the present corrosion detection system, and our high degree of confidence in the pig's findings, we expect to continue indefinitely our record of no mainline pipe leaks from corrosion.

The third area I will address is insuring the physical integrity of the line. In addition to Alyeska's corrosion program, the company has in place a systematic and comprehensive monitoring program to detect areas where the pipe might have settled. Settlement is a concern in designing the pipeline system, and geotechnical experts have been monitoring for settlement ever since the start-up to insure the pipeline's integrity.

The monitoring program includes comprehensive visual inspections of all pipeline elements, use of monitoring rods, thermistors in the use of a deformation pig, which locates and measures any pipe wall deformations that may be occurring. Our monitoring to detect settlement is, in our opinion, consistent with the industry's best practices.

With respect to maintaining the physical integrity of the line from acts of terrorism, Alyeska has developed a comprehensive security plan. We have, of course, stepped up our security activities since the outbreak of increased tensions in the Middle East, and have maintained this heightened state of alert.

In addition to prevention, Alyeska's contingency planning for the pipeline includes provisions for rapid repair of the pipeline should disruption occur. Equipment and manpower and logistic requirements for such repairs have been reviewed for emergency mobilization to any segment of the line.

The final subject to be addressed relates to how Alyeska is implementing the specific changes in TAPS mandated by the Oil Pollution Act. Under the act, regulations are to be promulgated that require tankers in Prince William Sound to be escorted by at least two towing vessels. This is practice that has already been put in effect by Alyeska as part of a Prince William Sound tankers spill prevention and response plan.

This plan provides for equipment, personnel and procedures that make Alyeska at least as well prepared as any terminal facility in the world. Alyeska has additionally entered into a contract with the Regional Citizens Advisory Council that represents a cross section of Prince William Sound communities. Its certification by the President of the United States under provisions of the act is pending.

Alyeska also is in the process of implementing provisions of the act that required it to provide oil spill equipment at strategic locations in the Sound. Most of these statutory provisions require implementation by the adoption of regulations, a process which has not yet been completed. However, much of what is required has already been placed by Alyeska.

In conclusion, the discovery of petroleum reserves in the North Slope of Alaska in 1968 was a watershed event. An elaborate pipeline construction plan was devised that included strict performance requirements and a monitoring process by Federal and State governmental offices, contract scientists, engineers and industry experts.

The environmental standards imposed upon the pipeline when it began operation have been heightened considerably, due in no small measure to the voluntary efforts of Alyeska to develop technological improvements. The system has worked, is working, and has proved that it will work for the likely production life of ANWR.

I can personally assure you that Alyeska is committed to operating TAPS in an environmentally sound and safe manner, as long as there are sufficient quantities of oil to economically transport. With the addition of reserves from ANWR, we are confident the Trans-Alaska Pipeline System will continue to operate safely and efficiently well into the next century.

Thank you, Mr. Chairman and committee members for the opportunity to testify. I will be pleased to respond to any questions you may have.

[The prepared statement of Mr. Hermiller follows:]

TESTIMONY

OF

JAMES B. HERMILLER

PRESIDENT, ALYESKA PIPELINE SERVICE COMPANY,

BEFORE THE

UNITED STATES SENATE

COMMITTEE ON ENERGY AND NATURAL RESOURCES

MARCH 12, 1991

Mr. Chairman and Members of the Committee. I am James B. Hermiller, President of Alyeska Pipeline Service Company ("Alyeska"). Alyeska operates the Trans-Alaska Pipeline System ("TAPS") for the following owner companies: Amerada Hess Pipeline Corporation, ARCO Transportation Alaska, Inc., BP Pipelines (Alaska) Inc., Exxon Pipeline Company, Mobil Alaska Pipeline Company, Phillips Alaska Pipeline Corporation and Unocal Pipeline Company.

I appreciate the opportunity to appear at this hearing on S. 341 as it relates to the potential exploration and development of the coastal plain of the Arctic National Wildlife Refuge ("ANWR") and to address the questions you raised. The Trans-Alaska Pipeline System would undoubtedly be utilized as the major transportation system to carry ANWR oil to the Port of Valdez for shipment to the South 48. It is fortuitous that ANWR, with its prospective large oil reserves, is located so close to a major 800 mile-long pipeline facility. All that would be needed is a connecting line of perhaps 75 miles in length.

Alyeska supports the opening of ANWR to exploration, particularly since successful ANWR development will likely extend the life of the pipeline. Significant discoveries in ANWR will not only enable the transport of ANWR oil but also enhance the production and transportation of North Slope crude oil of older fields as well as production from smaller discoveries that may otherwise be uneconomic.

In determining what role ANWR production could fulfill, one must look ahead 10 years which is the likely time it would take to produce the first barrel of ANWR oil.

CURRENT AND FUTURE CAPACITY AND CAPABILITIES

I would like to begin by addressing one of the questions raised in your invitation to testify. You asked how much oil is being transported currently as compared with past amounts and estimates of future capacity and capabilities. The current throughput of TAPS is 1.9 million barrels per day, which is close to its established throughput capability of 2.1 million barrels per day. By comparison, in 1990, TAPS throughput averaged 1.8 and, in 1985, 1.5 million barrels per day.

Moreover, we are able to handle consistently 99 percent of the crude oil tendered to us by the North Slope producers. As far as I know, this is an operational efficiency level unequalled anywhere else in the pipeline industry. We are proud of our throughput record.

As for the future, throughput is expected to gradually decline over the next 10 years to approximately 800,000 barrels per day and to less than 500,000 barrels per day by the year 2007, based on State of Alaska production estimates for North

Slope oil. If ANWR could be in production by the end of this decade, there would be sufficient capacity in TAPS to carry approximately 1.3 million barrels per day of additional crude oil.

With respect to the pipeline's current and future capabilities, I think our record speaks for itself. The pipeline has thus far carried over 8 billion barrels of North Slope crude and is currently transporting a quarter of our country's domestic oil production. Since its construction and initial operation, TAPS has been a facility of major strategic importance to the Nation, a fact underscored by the recent war in the Persian Gulf. TAPS' important role in America's energy policy is both a significant responsibility and a source of pride for all of us at Alyeska.

Our achievements include innovative technology based on research and development initiated by the Company. We are the industry leader in developing the use of a drag reducing agent to allow the shipping of more oil at less pressure, significantly reducing horsepower required to pump the crude from the North Slope to Valdez, thereby reducing combustion emissions. We are an industry leader in corrosion monitoring technology for large diameter pipe.

CORROSION TECHNOLOGY

Corrosion is a concern for underground pipelines throughout the world. Alyeska has had a comprehensive corrosion protection and detection program for the pipeline since it started operations in 1977. There has never been a leak from the mainline pipe as a result of corrosion: not a single one. This program has been improved since pipeline start-up and extends not only to the mainline pipe, but also to the pump stations, the gas line that supplies fuel to the first four pump stations, and the Valdez Marine Terminal; in short, all elements of TAPS.

Alyeska's comprehensive program of detecting, investigating and repairing corroded pipe is aimed at protecting the structural integrity of the pipe. To detect corrosion, Alyeska has employed various pipeline monitoring devices that are propelled through the inside of the pipeline by the flow of crude oil. These devices are known as "smart pigs."

In the co[illegible]f its operations, Alyeska has diligently sought to improve the capabilities of "smart pigs." At the inception of pipeline operations the most sophisticated pig available for large-diameter pipe, such as the 48-inch diameter TAPS line, could only reliably detect corrosion in those places in the pipeline where up to 50 percent of the wall thickness had been lost. In 1984, Alyeska embarked on a world-wide search for an enhanced corrosion detection pig. Alyeska established the specifications for ultrasonic pig technology. Ultrasound technology had never before been used for a large diameter pipeline like TAPS. Development runs of experimental pigs were made in 1987 and 1988, and the first successful production run of the ultrasonic pig took place in July 1989.

With the ultrasonic pig, detection thresholds were drastically decreased, and the accuracy of information was greatly improved. The ultrasonic pig measures the wall thickness of the entire surface of the pipeline on a 15 mm grid. Rather than simply noting an area of potential corrosion, the ultrasound pig generates wall thickness readings at each measurement point and can detect a wall thinning as little as 10 percent. It can also detect other pipeline defects like dents, gouges or laminations in the pipe wall. The ultrasonic pig is, in short, the most sensitive and accurate tool available to measure the wall thickness of the trans-Alaska pipeline. Alyeska is proud to have been involved in its development.

As a result of this improved technology, Alyeska learned that the majority of the pipeline is corrosion-free, as less than two percent of the total length of the pipeline is affected by corrosion. And we learned that most of the corrosion is concentrated in a few isolated stretches of the line in unusually difficult environments.

In those areas where significant potential corrosion is indicated, Alyeska excavates the pipe and then performs ultrasonic testing of the pipe wall. When repairs are required, a metal pipe sleeve is welded around the pipeline. In all instances, even when a sleeve is not required, the pipe is sandblasted to remove corrosion, coated with an epoxy phenolic corrosion coating, taped for additional protection and reburied.

This summer Alyeska is replacing approximately 8½ miles of 48-inch pipe at the Atigun River Floodplain, north of Atigun Pass, in the Brooks Mountain Range. It was more cost effective to replace this pipe because of its location.

Alyeska will continue to monitor and repair all areas of the pipeline that exhibit corrosion. With the present corrosion detection system and our high degree of confidence in the pig's findings, due to the highly accurate correlation between detected anomalies and corrosion found during excavations and examinations of the pipe, we are confident we can continue to operate and maintain our record of no mainline pipe leaks from corrosion.

ENSURING THE PHYSICAL INTEGRITY OF THE LINE

In addition to Alyeska's corrosion program, the Company has in place a systematic and comprehensive pipeline monitoring program to detect areas where the pipe may have settled. Settlement was a concern in designing the pipeline system, and geotechnical experts have been monitoring for settlement ever since start-up to ensure the pipeline's integrity.

The major cause of settlement is the melting of ice-rich soils beneath the pipe. Alyeska's program is designed for early detection of settlement so that effective repairs can be engineered. As with corrosion, Alyeska has become a leader in implementing a settlement program that is first rate among pipeline systems world-wide.

The program features visual inspection of all pipeline elements on a regular basis. The following surveillance activities are routinely conducted:

- * Security Overflights: daily helicopter reconnaissance to identify leaks and spills.
- * Maintenance Aerial Overflights: a helicopter reconnaissance conducted every two weeks to identify ground surface features such as cracks or rapidly developing depressions that indicate possible pipeline settlement.
- * Maintenance Ground Reconnaissance: drive-by ground inspection conducted five times a year from a truck to identify surface features indicating possible pipe settlement.
- * Security Line Walk: annual ground inspection conducted on foot.

If a program identified during these inspections is not solvable by routine maintenance procedures, it is reported to engineering immediately. In addition, site specific investigations, using a variety of techniques, are conducted at suspect pipe settlement areas identified by any of the line-wide monitoring methods.

Since the below-ground pipe cannot be directly surveyed to identify and quantify settlement, monitoring rods are installed on the pipeline. These provide a means of measuring precisely the total settlement and the rate of settlement in an area of concern.

Another feature of the program is the use of thermistors. These are temperature measuring devices installed in the ground in a vertical line to provide a means of determining the ground temperature profile. The stability of frozen soils is heavily influenced by the temperature of the soil. About 900 thermistors have been installed line-wide and are inspected on a regular basis.

As with corrosion, a major tool for locating potential problem areas is the use of "smart pigs." A "deformation" pig is run inside the pipeline to locate and measure pipe wall deformation (wave forms and dents). This pig is run twice a year and is the primary method used to identify areas where immediate repairs are required.

Alyeska is currently negotiating a contract to obtain a curvature pig device for the 48-inch line. This is another example of Alyeska's effort to make use of the best technology available for the safe and reliable transport of North Slope crude.

Other information gathered typically includes a survey that determines the elevation of the top of the buried pipeline at specific points along the pipe centerline and ties the height of the sensor to a benchmark with a known elevation. In all, 378 miles of the total 379 miles (99.7%) of buried mainline pipe have been profiled at least once by this survey. Where pipe settlement is suspected, core drilling and sampling of soils are taken to obtain engineering properties of the soils below the pipeline to estimate future settlement and to design repairs.

Based on the information gathered through the line-wide and site-specific monitoring methods, an annual engineering evaluation is performed to determine if a repair is required at a problem area. The evaluation addresses the stability of the pipeline; the need for any additional monitoring data; an estimate of the repair lead time using current monitoring data and past experience; the assignment of "repair priority" and monitoring frequency if immediate repair is unwarranted; and a recommendation for repair design. To date only 11 locations, totailing 1.1 miles in length or 0.3% of buried pipe have required subsidence repairs.

With respect to maintaining the physical integrity of the line from acts of terrorism, such as the sabotage incident at Steel Creek in 1978, shortly after pipeline start-up, Alyeska, in conjunction with State and Federal law enforcement agencies, has increased its security activities since the outbreak of increased tensions in the Middle East. The additional measures we have taken are for facilities throughout the 800-mile long system.

Included in these provisions are added security personnel for access control; electronic monitoring and area patrols;

increased perimeter security restrictions for access to pipeline facilities; tightened personnel inspections within the pump stations and the Valdez Marine Terminal; and increased air and ground surveillance throughout the system. Additionally, the Company remains in daily contact with law enforcement and intelligence agencies and has access to national and overseas advisories.

In addition to prevention, Alyeska's contingency planning for the pipeline provides for rapid repair of the pipeline should disruption occur. Equipment, manpower and logistic requirements for such repairs have been reviewed for emergency mobilization to any segment of the line.

OIL POLLUTION ACT OF 1990

You have also asked how Alyeska is implementing the specific changes mandated by the Oil Pollution Act of 1990 ("OPA"). As you are aware, the OPA imposes a number of general requirements including the establishment of a liability scheme and financing mechanism for oil spills and the preparation of an oil spill response plan by certain critical onshore facilities.

Several provisions in the OPA are specific to Alaska and the Prince William Sound. Tankers in the Prince William Sound must be under the direction and control of a licensed pilot and, in designated waters, must have on the bridge a licensed Master or mate. Regulations are to be promulgated that require tankers in

Prince William Sound to be escorted by at least two towing vessels. This is a practice that was put into effect by Alyeska over a year ago.

The OPA also establishes Oil Terminal and Oil Tanker Environmental Oversight and Monitoring Demonstration Programs for Prince William Sound and for Cook Inlet and provides for regional citizens advisory councils in each area. The OPA authorizes Alyeska or its owner companies, in lieu of such program, to enter into a voluntary contract with an independent citizens' advisory council, so long as the council is funded on an annual basis in an aggregate amount of $2 million and the President annually certifies that the council represents the interests in the area. Alyeska has entered into such a contract with a Regional Citizens' Advisory Council that represents a cross-section of Prince William Sound communities. Its certification by the President as required by the Act is pending.

The OPA requires a response plan for each tank vessel operating, or a facility located, in Prince William Sound to provide for pre-positioned oil spill containment and removal equipment in strategic locations in the Sound. Additionally, the OPA requires an oil spill removal organization consisting of trained personnel in sufficient number "to immediately remove, to the maximum extent practicable, a worst case discharge or a discharge of 200,000 barrels of oil, whichever is greater."

Our response plan also provides for training, practice exercises, and periodic testing of equipment as required by the

OPA. The OPA requirements are in addition to the requirements for response plans established by the Federal Water Pollution Control Act and by Alaska State Law. Alyeska has made great progress in developing a Prince William Sound Tanker Spill Prevention and Response Plan. This plan provides for equipment, personnel and procedures that make Alyeska at least as prepared and well equipped to respond to an oil spill as any terminal facility in the world. Alyeska's plan will be modified, if necessary, to meet State and Federal requirements when they are finally prescribed.

The OPA established a Presidential Task Force, with a two-year life, to audit TAPS and make recommendations to the President, Congress and the Governor of Alaska concerning prevention of oil spills, damage to natural environment, and degradation or damage to public health. A Prince William Sound Oil Spill Recovery Institute is also established to conduct research and carry out educational and demonstration projects related to oil spills and the arctic and sub-arctic marine environment. Finally, a civil penalty, not to exceed $1,000 per barrel, will be assessed for discharge of oil in transit to TAPS, during transportation through the TAPS, or handling at the Valdez terminal facility. Most of these provisions require implementation by the adoption of regulations, a process which has not yet been completed.

CONCLUSION

The discovery of vast petroleum resources on the North Slope of Alaska in 1968 was a watershed event. It spawned controversy from the very beginning. The country had never before faced the prospect of producing oil from an arctic wilderness and transporting it across frozen tundra, through permafrost, over major mountain ranges, crossing hundreds of rivers and streams to an ice-free port for further carriage by tankers to the U.S. markets.

The main reason government regulators, environmentalists and the general public were skeptical was that it had never been done before. Identifying the technical problems and the potential impacts to the environment required the efforts of task forces, study groups, hearings, and negotiations involving hundreds of experts from governmental, academic and industrial circles.

An elaborate plan was devised that included strict performance requirements and a monitoring process by State and Federal government agencies and contract scientists, engineers and experts. They interfaced with each other and approved every step of the design, planning and construction of what many people -- for good reason -- consider a major wonder of the world, the Trans-Alaska Pipeline System.

Eight billion barrels of oil have been shipped through the pipeline over the past 13 years. The environmental standards imposed upon the pipeline when it began operation have been heightened considerably due in no small measure to the voluntary efforts of Alyeska to develop technological improvements. The system has worked, is working, and has proved that it will work for the indeterminate life of the pipeline.

I can personally assure you that Alyeska is committed to continuing to operate TAPS in an environmentally sound manner. We will maintain this system to continue this record of safely transporting North Slope oil as long as there are sufficient quantities of oil to economically transport. With the addition of reserves from ANWR, the Trans-Alaska Pipeline System will continue setting the standard for excellence in pipeline operations well into the next century.

Thank you, Mr. Chairman and Committee Members, for the opportunity to testify. I will be pleased to respond to any further questions you might have.

STATEMENT OF MIKE MATZ, CHAIRMAN, ALASKA COALITION

Mr. MATZ. Mr. Chairman, I really appreciate the opportunity to testify today, before you on the Arctic National Wildlife Refuge, title IX of your bill.

I am chairman of the Alaska Coalition. the Alaska Coalition is a federation, a loosely knit federation of over 70 different organizations, including the Natural Resources Defense Council, the Northern Alaska Environmental Center, the National Congress of American Indians, the Garden Club of America, the Wilderness Society, among others. I am here today on behalf of all of them.

Senator Johnston is chairman of this committee, and as chairman of the Appropriations Energy Subcommittee you have a great deal of experience, expertise in energy-related matters. You have been working on these issues, on these committees for nearly two decades, and as a result your experience runs deep, and is well respected by everyone.

That makes it particularly difficult to come before you today and tell you that I think in the Johnston/Wallop bill you are taking the wrong path, and I do so out of a great deal of deference and with a full measure of respect for your capabilities.

The CHAIRMAN. You are not the only one in the country who believes that.

Mr. MATZ. I think everyone wants to achieve a certain goal here. Everyone agrees that that goal is a laudable one. In the future everyone wants to try and avoid wars like the one that just ended, which as you mentioned in part was a war over oil.

No matter how decisive or how successfully we engage those wars, or how limited the casualties on our side, I think that we all hope that the need to fight in unstable regions of the world, because of a need to secure reliable supplies of oil, can be averted to the best of our ability.

Now, achieving that goal will require an energy policy, and again on that I think everyone is in agreement. But where we differ, Mr. Chairman, is on what the components of that energy policy should be, what would be the best energy policy.

As far as we are concerned, developing the arctic refuge would not really help the Nation attain that goal. In fact a case could be made that quite the opposite is true. Developing the arctic refuge, if in fact there is any oil there, would give us a false sense of security by leading many to believe that America could produce our way out of this energy dilemma that we collectively face. We cannot. We have tried that approach for the past decade, and it did not stop us from having to fight this last war.

Continuing along that path—and I will apologize in advance for what you may consider scarlet rhetoric—takes us inexorably down a dangerous drain-America-first path. Continuing along that path is not only to condone our dependence on oil, but even to sustain or to feed an addiction, whether to domestic or foreign supplies, it is all the same substance.

Continuing along that path, I think if we look at it realistically, only exacerbates the problem. Now, I think everyone is also in agreement that we will have to conserve more oil, but as Senator Murkowski pointed out, the developing nations of the world will be using more and more oil, and I mean it is just a fact of life, will need oil. Whether we like it or not, the world will be dependent on that substance for a while.

So where are we going to get it? Well, Mr. Chairman, you made a comment the other day, when Admiral Watkins was here initially presenting his National Energy Strategy. You said that environmentalists cannot stand increased production. And while it may seem like that, it is not actually the case.

We are firm believers in enhanced oil recovery as one way to significantly increase production. The potential is enormous, because in most cases recovery rates are so abysmal right now. Right now in some fields, conventional production techniques result in recovering as little as 5 percent of the in-place reserves.

The University of Texas reports that out of existing wells in Texas, using new horizontal drilling techniques, and with some incentives for those, the Nation could get an additional 11 billion barrels of oil. Admiral Watkins noted, not today but at the hearing previously, that the bulk of the oil that the National Energy Strategy comes on will come from enhanced oil recovery, and the Department of Energy, according to them the amount of oil considered unrecoverable right now, using conventional methods, is 300 billion barrels of oil.

That is a lot oil. Environmentalists are not saying that we should not produce that oil, that we should not find ways to get that oil out of the ground.

Mr. Chairman, we are also not opposing development in other areas of Alaska. We have a map here, if we can put it up, of the North Slope of Alaska. Once we get it up here, on the left you will be able to see the national petroleum reserve. It is shaded in red there, and then on the right is the 1002 area, the coastal plain of the arctic refuge.

Existing fields are on that map, fields such as Prudhoe Bay, Kuparuk, Lisburne, Milne Point and Endicott. Now, as an undeniable function of producing oil, those fields are declining each day, and have been since the oil companies first started producing oil from them. But there is still a considerable amount of oil in those fields, and will be for another decade or more, especially if the Nation can curb our demand.

An Alaska Department of Natural Resources production forecast for those five producing fields over a 5-year period, when the fields were supposed to begin their decline, was pegged at 4.2 million barrels a day. That was the estimate. Actual production for that period was 4.6 million barrels a day. So I think that there is still a lot of oil there that we can count on going through the Trans-Alaska Pipeline.

The CHAIRMAN. 4.6 million barrels a day?

Mr. MATZ. That is correct, yes. From those fields, that was the actual production. And the Department of Natural Resources estimated that over that 5-year period there would be 4.2 million barrels a day.

The CHAIRMAN. No, I think the capacity of the line is 2 million barrels a day.

Mr. MATZ. But over the course of the field, I think that that is what the production was, and that they would hold it there and then put it through the pipeline daily.

Well, at any rate, as you can see from the map, in the vicinity of those five fields, there are other fields with known reserves totalling several billion barrels of oil, 34 billion barrels of oil in-place resources. These fields have not been tapped yet, and many of those fields are close to the existing infrastructure, the Alaska Pipeline, the black line that goes down through the center of the map.

In fact, the West Sak field lies right atop the Kuparuk field, which is currently in production. The West Sak field holds anywhere from 15 to 25 billion of in-place resources, of which 1.2 billion barrels are presently thought to be recoverable.

Now, Mr. Chairman, other than offshore in the Chukchi and Beaufort Seas, where industry right now does not have the capability to handle a spill or a blowout in those ice-choked waters, we have never opposed the development of those existing fields along the North Slope. Our concern is not whether or not these fields are developed, but that when they are developed they are developed in compliance with all applicable environmental regulations and using best available technology.

Despite oil companies claims that they have learned quite a bit from developing the North Slope, the fact of the matter is that cutting costs is good business. If that means reducing the size of a gravel pad and placing more well heads on it, then that is a good business decision, as well as good for the environment.

But if building a causeway is considered less expensive by the oil companies, and therefore increases the margin of probability, the oil companies fight the agencies who, for sound environmental reasons, urge that a causeway should not be constructed. Such is the case with the Niakuk field, which is just offshore in State waters. For a number of years now, the Alaska Department of Fish and Game and the U.S. Fish and Wildlife Service have been studying the effects of causeways on water currents and fish migrations, and also the effectiveness of breaches in those causeways as a way to minimize the impacts, the environmental impacts.

The experts concluded that perhaps another means of connecting the gravel man-made islands to the shore would be environmentally better and also feasible to the oil companies. Even the Army Corps of Engineers, which is not necessarily the most environmentally inclined agency, concurred with those experts.

But rather than do what the agencies thought was best, collectively agreed was the environmentally best approach, the oil companies balked, came to Washington, lobbied the commanders of the Army Corps of Engineers, and had the decision of the field experts reversed.

What the environmental community is saying, Mr. Chairman, is let development proceed in those areas where it is appropriate, but insure that the industry plays by the rules and considers the environment as more than just a business decision. Environmentalists do not mind, in fact, if Alaska provides the Nation with secure supplies of oil, as long as an effective monitoring presence is assured to keep industry honest.

Now the shaded area, the red-shaded area, the white area in the middle, all but the green coastal plain area and the 450,000 acres to the east of that that you mentioned—all of that is available for leasing by the oil companies. On-shore acreage totals more than 35 million acres, or approximately the size of the State of Michigan, and less than 20 percent of that acreage has been leased by the oil companies. The National Petroleum Reserve, the red area, is the size of Indiana, but only 28 exploratory wells have been drilled in that area, or about one well for each three-quarters of a million acres.

That is a lot of real estate that has not been explored, or has been spottily explored. So with all the opportunities for leasing, with so few exploratory wells drilled, and with all these other areas available, the question we pose is, why is it so absolutely necessary for the oil companies to be given access to the arctic refuge now?

But I would like to take a look at that question briefly, if I may. One reason, obviously, may be that the oil companies want to get into the arctic refuge. As you can see from the map, it is the only place on the North Slope that the industry does not now have the ability to lease. The oil companies think that the arctic refuge represents a pretty good prospect, and the oil companies thought that when the Interior Department announced that there was only a 19 percent chance of finding economically recoverable oil.

But then, in early February, the Interior Department produced new figures which more than doubled the chance of finding economically recoverable oil to 46 percent, but said that the study on which these new figures was based, would not be available until April. I guess that I am somewhat troubled that conclusions of the study are being released before the actual study is completed. I kind of hope, Mr. Chairman, that you are concerned about this, too. I know that other members are.

Mr. Yates held a hearing last week, at which he asked Secretary Lujan about the new study, and while Mr. Lujan did not know a lot about the particulars, he did say that the Department of Energy told him the estimates should be revised. Later in the week when Admiral Watkins testified before the same committee, Mr. AuCoin asked him about the revised estimates. Secretary Watkins told him that the study had in fact been completed and would have a copy to his office within the hour.

The CHAIRMAN. Mr. Matz, I do not want to cut you off, but if you could summarize in a couple of minutes, so we can get to the other witnesses and get some time for questions.

Mr. MATZ. Sure, I am sorry, Mr. Chairman.

Anyway, Mr. AuCoin is still waiting for the study, and we have tried to get our hands on the study, too. In fact, we have had to file a Freedom of Information Act for it, and have not been able to get it. So, I guess the question is, what is the Department trying to hide? And I guess what we would like to do is see the General Accounting Office take a look into the matter and provide an objective assessment of these new figures before we start accepting them as anything but politically motivated.

But, having said all that, let me just make one more point on that particular thing, and that is that in the—there is a 100 percent chance that we could generate electrical power if we built a dam in the Grand Canyon. I think that you would find that the American public would have trouble with the construction of a dam in or affecting the Grand Canyon National Park.

The CHAIRMAN. I want to go on record against that.

Mr. MATZ. That is right. That is the same situation we are facing here with the arctic refuge. Even if there was a 100 percent chance of finding oil, I think that because of the values of the arctic refuge it should be not developed, even if there were 100 percent chance of finding oil.

I only have one other issue here, the revenue question, which is another reason that I see being put forward to go forward with oil and gas exploring in the arctic refuge, this one by you and Mr. Wallop in S. 341, which is a slight variation of your proposal last Congress that those monies, possible monies be distributed for a wildlife restoration programs or wetlands preservation programs, something like that.

There are a couple of problems with this. I mean, you mentioned one earlier, it violates the rules of the Congressional Budget Office, and I understand that rules can be changed, and you may work on that, but for the time being the rules are that asset sales cannot be counted as revenue. That is because oil and gas resources are defined as a revenue.

Another problem with this is that there is no guaranty that the money would be spent for the kinds of programs that we want, because it is at the discretion of the Energy Department. Last year, when we worked together to pass the Tsongas Timber Reform Act, one of the reasons that that act was needed was because the Forest Service was spending money from the Tsongas Timber Supply Fund, and doing a long of things that it should not have been doing.

When we pass the reform act, we cleared up that problem. Now we are creating another entity to spend money outside the normal appropriations process.

The CHAIRMAN. Well, we want to be sure that is spent for those purposes. If there is a way to tighten up that language, we would be glad to do it.

Mr. MATZ. One of the purposes that we have problems with, and one of them that is in your bill, title XII, is the nuclear component. We have trouble, I guess, seeing money of that kind being spent on those types of programs. Some of the energy efficiency and other measures are very helpful, but perhaps we could find the money elsewhere.

The CHAIRMAN. Can I ask you to——

Mr. MATZ. One point, I am sorry, sir.

The fifth problem is the question of how much money we are actually talking about, now. In the President's budget for 1993, he comes up with $1.9 billion that will come as a result of lease sales to the Federal Treasury. The first lease sale is 300,000 acres, which means that the oil companies apparently are going to pay $6,337 per acre for the rights to drill.

Now, other lease sales in that area, right offshore of the arctic refuge, have gone for $33 per acre, and $153 an acre. So I am not quite sure where these figures are coming about the money into the Federal Treasury, and I think it would be helpful if we are banking on a cash cow from lease revenues and bonus bids and royalties, to have an independent assessment to see actually how much the potential revenues would be.

Finally, I am going to conclude. I am going to talk a little bit about the arctic refuge itself. I have a quote here from page 46 of the final 1002 Report. "The arctic refuge is the only conservation system unit that protects, in an undisturbed condition, a complete spectrum of arctic and sub-arctic ecosystems in North America."

I have been there; you have been there. We have seen that area. You know that there is wildlife up there. It is a pretty amazing wildlife spectacle. Now, the other thing that the Fish and Wildlife Service says is that the coastal plain is the most biologically productive part of the arctic refuge, and is the center of wildlife activity.

From the perspective of the members of the Alaska Coalition, it would be a shame if Congress considered the energy situation in this country so bleak that we had to authorize development and allow the oil industry to plunk down an industrial complex in the heart of the refuge. You have seen that country; you know that, with the central processing facilities, the roads, the pipelines, the port facilities, the air strips—all of that is visible from a long way away.

If the oil companies go there, the wildlife will be displaced to certain degrees, and we really do not know what it will be. The wilderness will be gone, but there is more to it than that. The native community which was alluded to earlier—there is actually two sets of native groups.

The CHAIRMAN. Mr. Matz, I have just got to ask you to conclude, if Mr. Yeager and Mr. Herrera are to be heard from.

Mr. MATZ. Okay, well I have a couple of things I would like to submit for the record.

The CHAIRMAN. We will certainly put that in the record, but we did want to have time for questions.

Mr. MATZ. I guess, Mr. Chairman, we want to work with you on an energy policy, but we would prefer to work with you on one that does not have as its center piece the arctic refuge.

[The prepared statement of Mr. Matz follows:]

ALASKA
COALITION

'To Preserve Alaska's National Interest Wildlands'

WRITTEN TESTIMONY FOR

SENATE ENERGY AND NATURAL RESOURCES COMMITTEE

PUBLIC HEARING ON S. 341, TITLE IX,

LEASING THE ARCTIC NATIONAL WILDLIFE REFUGE

PRESENTED BY

MIKE MATZ, CHAIRMAN

ALASKA COALITION

MARCH 12, 1991

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The Alaska Coalition is a broad-based organization which counts more than 70 various groups as members. The complete list of participating organizations is attached to this testimony. The Alaska Coalition was formed fifteen years ago, in 1976, to work for passage of the Alaska National Interest Lands Conservation Act. The Alaska Coalition saw the law successfully enacted when signed by President Carter in 1980. The Alaska Lands Act (P.L. 96-487) is one of the greatest land protection measures in this century, protecting just over 100 million acres of lands as national parks, national wildlife refuges, wild and scenic rivers, national recreation areas, and other public lands for all to use and enjoy.

The Alaska Coalition works today to ensure that the concept behind the Alaska Lands Act is upheld, and it has been an uphill battle. The law was first implemented by the Department of Interior during the tenure of Secretary James Watt. His successors in the Reagan Administration were often more diligent about finding ways to circumvent the law than they were in implementing and abiding by it. The agencies charged with administering this wealth of land have been chronically underfunded. The effects of flaws in the law are now coming into full light, including illegal land exchanges and misinterpreted intent. Now a serious threat is posed to the integrity of one of the most spectacular units, the Arctic National Wildlife Refuge, which was established in 1960 and whose protection was enhanced by the Alaska Lands Act. In 1980, Congress enlarged the wildlife sanctuary to its present size, and designated nearly all of the former range as wilderness.

We appreciate the opportunity to present our views today on Title IX of S. 341. Because of the inclusion of Title IX in this bill, I must register our opposition to the legislation as a whole, on behalf of all organizations in the coalition and their combined membership of over two million people. We cannot find merit in any legislation that would open the Arctic National Wildlife Refuge to oil and gas leasing, exploration, and development. We can see no compelling reason why the wildlife sanctuary should be opened to oil and gas development for the oil industry. We firmly believe the Arctic

National Wildlife Refuge should be protected by designating the coastal plain a component of the National Wilderness Preservation System.

We support legislation, S. 39, that has been introduced by Senators Roth and Baucus and co-signed by Senators Chafee, Lieberman, Durenberger, Bradley, Gore, Moynihan, Leahy, Simon, Akaka, Biden, Harkin, Kennedy, Metzenbaum, Kerry, Pell, Lautenberg, Bryan, and Wellstone. This bill would amend the National Wildlife Refuge Administration Act to designate the coastal plain of the Arctic Refuge as wilderness. The bill has been referred to the Environment and Public Works Committee, which will hold hearings on it in April.

INADEQUACY OF THE 1002 REPORT

Two weeks from today will be the two-year anniversary of the tragic spill in Prince William Sound, caused when the supertanker *Exxon Valdez* ran aground on Bligh Reef. The spill took its toll on wildlife at the time as over 150,000 migrating waterfowl and other birds and over a thousand sea otters were found dead. Untold others may have never been recovered.

A lot has happened since then. Studies of the area have been conducted and preliminary findings are very disturbing. According to a front-page story in the Washington *Post* in early March:

> Federal scientists estimate that some seabird colonies may require up to 70 years to recover.
>
> Another study suggests that oil may have reduced the populations of rockfish, herring, shrimp, mussels and clams, among other marine organisms, presenting "a considerable risk that some of the species may not respond to conventional management actions for decades."
>
> Marine scientists in the Alaska Department of Fish and Game [note that] "several species of marine fin fish and shell fish may have been damaged by the *Exxon Valdez* oil spill."
>
> Federal scientists reported last spring that they had found hydrocarbon derivatives of oil in the gallbladders of pollock up to 600 miles from the site of the spill a year after it occurred. Scientists say the presence of the contaminants in a deep-water fish so far from the spill indicated that oil had entered to food chain.

In the time since the 1989 spill, Congress passed and the President signed the Oil Pollution Act of 1990 (P.L. 101-380), a law designed to prevent future spills, to assign liability for those that do happen, and to provide compensation for damages. But in Title VIII the law also called for a Presidential Task Force, an entity which is charged with conducting a comprehensive audit and report on structural and operation problems with the trans-Alaska pipeline system, terminal facilities, and tanker operations.

Recent issues have arisen that make the need for this task force very compelling. Public reports now indicate that Exxon transfers wastewater from its operations on the West Coast to the terminal facilities at Valdez. Troubling as this disclosure is, its significance is made worse by the fact that the Alaska Department of Environmental Conservation has raised questions about the ballast water treatment facilities at Valdez and whether wastewater is actually treated or just passed through untreated into the Valdez arm of Prince William Sound.

In addition, further public reports show that the trans-Alaska pipeline suffers from serious corrosion problems. In an article printed by the Anchorage *Times* last September under the headline "Rust may have reached deep inside pipeline" these statements appeared:

> Alyeska said initial tests of an excavated section of 48-inch diameter pipe show "20 to 25 percent wall loss." The pipe wall is half-inch thick.
>
> This section of pipe is the second seriously damaged segment to be discovered. Another 9-mile portion, 10 miles to the north of the newly discovered portion, is to be replaced next summer.

Now, too, recent reports indicate that with the production of oil comes radium from beneath the surface of the earth. Officials now studying this surprising new problem say that they are finding oil fields to be tainted with radioactivity. This radioactivity poses a threat not only to oil field workers but to the environment as well. The Anchorage *Daily News* reports that:

> The problem is only now being examined by the oil industry and the federal government, which has no regulations to deal with oil field radiation.

Unfortunately, no Presidential task force exists to examine these very serious matters, and no comprehensive audit has been initiated. Despite the law calling for the task force to be created -- primarily to study the above issues and avert another catastrophe on the scale of the *Exxon Valdez* -- it has not been established or funded nearly eight months since enactment of the Oil Pollution Act of 1990.

The trans-Alaska pipeline, terminal facilities in Valdez, and tanker transports all comprise the same industrial system and should be studied in that context. Any additional oil coming from the North Slope (and there will be decade's worth even if the Arctic Refuge is left unmarred) flows through that system. The structural integrity and safety of that system needs to be taken into account in any decision to open the Arctic Refuge, and it has not to date.

Besides these issues, the scientific experts in Alaska have not been idle. Further studies of the types that were covered, to varying degrees of completeness, in the 1002 Report are being conducted and have been since its release four years ago in April 1987.

One of the most eye-opening reports concerns the caribou populations in the industrial complex of Prudhoe Bay and surrounding oil fields. This past summer population counts of caribou in the Prudhoe Bay area found that their numbers had decreased. What this means to the experts is not clear yet, but it could be an indication that previously unknown factors or longer-term impacts are just now coming to light.

Other studies have been completed since the release of the 1002 Report. A partial listing of these studies would include:

Terrestrial Research, 1002 area, Arctic National Wildlife Refuge, USFWS, 1989

Distribution, movements, and behavior of Caribou in the Kuparuk oilfield, Johnson and Lawhead, 1989

Distribution and productivity of the Central Arctic Caribou Herd in relationship to petroleum development, ADFG, 1989

Variations in initial calf production of the Central Arctic Herd, ADFG, 1988

Water resource inventory and assessment, Arctic National Wildlife Refuge, USFWS, 1990

Winter water availability of the 1002 area of the Arctic National Wildlife Refuge, USFWS, 1989

It might very well benefit those who make the decision regarding oil development in the Arctic Refuge to have a supplemental assessment of the effects of oil development on the coastal plain compiled from these more recent studies. After only fifteen years of extensive development on the North Slope, it is extremely difficult for the oil industry and proponents of development to conclude that no problems exist. It was several decades before the hazards at Love Canal were fully realized. Learning from additional data that have been collected, would in any event make for a more informed decision.

S. 341 would shut the door on these recent studies by judging the 1002 Report to satisfy the NEPA requirements. The 1002 Report would thereby be considered adequate as a final environmental impact statement for purposes of leasing.

Both the Environmental Protection Agency and the Congressional Research Service provided comments to the Interior Department regarding its 1002 Report. The comments were very critical. Both agencies found deficiencies in several areas -- one going so far as to cite the 1002 Report "insufficient as a statutory EIS." The Environmental Protection Agency, the authoritative agency on NEPA, labelled the 1002 Report merely a

> basis of support for a recommendation by DOI to open all lands in the 1002 area to full oil and gas development.

This does not provide one confidence that the 1002 Report is adequate.

OIL INDUSTRY'S "FOOTPRINT" ON THE COASTAL PLAIN

The claim used by the oil industry and its supporters that the "footprint" of their operations will be small -- so small, industry contends, that the area actually disturbed would be less than 1 percent of the coastal plain -- needs examination and clarification. The oil industry likens its hoped-for development in the Arctic Refuge to an area equivalent to the area covered by Dulles International Airport. Such a claim is not only overly simplistic, it is also grossly misleading.

The 1002 Report indicates that the acreage directly and indirectly affected by development under a full-leasing scenario would be 12,650 acres. Under such a scenario, the following facilities would be needed:

50-60 gravel drill sites, 20-35 acres each
40-50 wellheads per drill site
50-60 waste pits, 13 million gallon capacity each
3 central production facilities
1-3 seawater treatment plants
indeterminate mileage of water pipeline
3 or more airports
280 miles of main and spur roads
10-15 gravel excavation sites
100-150 miles of main oil pipeline
indeterminate mileage of connector oil pipeline
1-5 pump stations
2-3 marine facilities or ports
2-3 gravel causeways, 1-4 miles long
2 or more solid waste disposal dumps
housing for 1500 to 6000 workers
sewage treatment facilities
administrative facilities
maintenance facilities

A comparable set of facilities is present at Prudhoe Bay, where oilfields sprawl over 580 square miles, directly covering 9,402 acres. (See attached map.)

Development of these facilities will require large quantities of water and gravel. According to the Interior Department, "as much as 15 million gallons of water may be needed to drill one exploratory well." The lack of available water on the coastal plain presents serious environmental and engineering problems. From the 1002 Report:

> Water in the 1002 area [the coastal plain] is confined to surface resources, and there are few lakes of appreciable size within the area.
>
> The dedicated industrial use of limited natural fresh-water sources of the 1002 area would be a major effect [of any development].

For construction of roads, ports, pads, airstrips, causeways and pits, enormous quantities of gravel will need to be extracted from borrow sites. The Interior Department cites a need for 40-50 million cubic yards of gravel under the full-leasing scenario. Obviously, the impact of extracting this resource will be great, and may extend beyond the 1002 area into the adjacent foothills, which currently have status as designated wilderness areas. According to the 1002 Report:

> The availability of adequate gravel supplies on the 1002 area is uncertain. Gravel could be mined from inactive streambeds, but additional pits would have to be opened to obtain the large quantities required for roads, pump stations, airports, and maintenance support facilities. Gravel might have to be mined from upland sites, river terraces, streambeds, lagoons, or other sites.

One needs to remember the terrain of the coastal plain. The coastal plain sweeps down from the foothills of the Brooks Range out to the Beaufort Sea. On the tundra, no vegetation grows taller than ankle-high. Any development of any type is visible from miles away -- despoiling an irreplaceable Arctic wilderness. Such an intrusion cannot fairly be described as a "footprint."

OIL COMPANY PROFITS

Oil companies are in business to make profits, and we can find nothing wrong with that, so long as oil companies are not exploiting a situation to gouge consumers in order to increase profits dramatically. Such would seem to be the case if we look at fourth quarter operating income last year compared to the fourth quarter of the previous year.

	1989	1990	percent increase
Exxon	1,255	1,555	23%
Chevron	320	801	151%
Mobil	412	769	86%
Amoco	387	619	60%
Shell	264	446	70%
Texaco	382	605	58%

Exxon, which had over $2 billion in clean-up costs (tax deductible), still managed to increase its operating income by 23%, and the rest of the multinationals did even better not having caused huge spills.

The point here is not to bash capitalistic ventures like the oil companies, but to pose an inquiry. With all these profits, could the oil companies invest in more research and development for alternative sources of energy? The industry is not making this choice of its own volition, but perhaps it is in the best interests of the nation to prod industry to devote more of these profits to developing renewables.

Once perfected, renewables do not provide the profits that oil does because energy from the sun or from wind power comes very cheaply and supply rarely runs out to squeeze prices higher. That may be one significant reason why the oil industry does not dedicate more to research and development or to enhanced oil recovery (and why the oil industry covets the Arctic Refuge so). Still, Saudi Arabia, with its vast pools of oil, is investing heavily in this type of research and development. The Saudi government established a technology institute, funded by its oil profits, for the purpose of developing energy sources they can provide the world once oil plays out. They have time, considering they sit atop 600 billion barrels of oil. We don't.

PUBLIC SUPPORT FOR PROTECTING THE ARCTIC REFUGE

In every poll conducted on the subject, those who want to see the Arctic Refuge protected as wilderness far outnumber those who want to see it developed. In a New York *Times*/CBS poll asking respondents if they favor or oppose drilling the Arctic Refuge, 31 percent said they favor such, while 51 percent opposed it; the rest were undecided. In a Media General/AP poll, respondents were asked if they thought the government should allow oil drilling in the Arctic Refuge; 60 percent said no, 26 percent said yes. A poll conducted by a Republican pollster who works for the White House found that 79 percent of respondents opposed developing oil in wilderness.

CONCLUSION

In Alaska, the balance -- such as it is -- has already been struck. Of 1100 miles of northern coast, all but that which is in the Arctic Refuge is available to the oil industry for exploration and development. There is no way, using the experience at Prudhoe Bay and Milne Point and Kuparuk and Endicott, that the oil industry can develop the Arctic Refuge without despoiling the wilderness. There can be no legislation on energy that can be made acceptable enough, no matter how stringent the efficiency standards on automobiles or how much emphasis is placed on renewables; the Alaska Coalition opposes any bill that includes authorization for oil and gas development in the Arctic Refuge. The coastal plain of the Arctic Refuge should be added to the wilderness preservation system along with the other 8 million acres of wilderness designated in the wildlife sanctuary.

The Alaska Coalition believes the coastal plain should be protected in perpetuity, just as we have done with the Grand Canyon, the Blue Ridge mountains, Yellowstone, and other examples of our once vast natural heritage. At a minimum, future generations should have the choice to decide if they need a dam in the Grand Canyon, coal from the Blue Ridge, geothermal from Yellowstone -- or oil from the Arctic National Wildlife Refuge.

ALASKA
COALITION

'To Preserve Alaska's National Interest Wildlands'

Current Members of the Alaska Coalition:

American Rivers Conservation Council

Defenders of Wildlife

Friends of the Earth

National Parks and Conservation Association

Natural Resources Defense Council

Sierra Club

The Wilderness Society

American Littoral Society

Animal Protection Institute of America

Appalachian Mountain Club

Washington Wilderness Coalition

Tennessee Audubon Council

Northwest Illinois Audubon Society

Florida Audubon Society

Watauga Audubon Society (TN)

Audubon Council of Illinois

Amos W. Butler Audubon Society, Inc. (IN)

Delaware Nature Society

The Alabama Conservancy

Hoosier Audubon Council (IN)

Mark Trail/Ed Dodd Foundation

Utah Wilderness Association

Alaska Center for the Environment

Arctic Audubon Society

Northern Alaska Environmental Center

Trustees for Alaska

Southeast Alaska Conservation Council

Porcupine Caribou Management Board
(Yukon, Canada)

Yukon Conservation Society
(Yukon, Canada)

Western Arctic Coalition
(Canada)

Sierra Club of Canada

National Congress of American Indians

International Indian Treaty Council

Society for the Protection of Nature in Israel
(Tel-Aviv, Israel)

Garden Club of America

Southern Utah Wilderness Alliance

AHKE
Society for Outdoor Recreation (MN)

Indigenia

Rivers Unlimited

Friends of the Boundary Waters Wilderness (MN)

Federation of Western Outdoor Clubs (WA)

Prairie Woods Audubon Society (IL)

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Indiana Sassafras Audubon Society

Minnesota Ornithologists' Union

Maine Audubon Society

Environmental Action, Inc.

Cherokee Audubon Society (TN)

Greater Knoxville Audubon Society (TN)

Vermont Audubon Council

Northcoast Environmental Center (CA)

New Mexico Wilderness Study Committee

Renew America

Cumberland-Harpeth Audubon Society (TN)

Students Against Violation of the Environment (KY)

Mountaineer Audubon Society (WV)

Virginia Wilderness Committee

Arizona Wilderness Coalition

American Wilderness Alliance

Ohio Audubon Council

Mt. Shasta Area Audubon Society (CA)

ALLIANCE

The Ozark Society

Idaho Conservation League, Wood River Chapter

New Hampshire Outing Club

New Mexico BLM Wilderness Coalition

Wildlife and Environmental Defense Network (OR)

The Coalition for Our Earth (CA)

Emma Bell Miles Audubon Society (TN)

West Michigan Env. Action Council

Alaska Coaltion of Washington

Black Hills Audubon Society
Blue Mountain Audubon Society
Boeing Employees Alpine Club
Eastlake Audubon Society
Greenpeace Northwest
Inland Empire Fly Fishers
Inland Empire Public Lands Council
Inland Northwest Wildlife Council
Izaak Walton League (Takoma Chapter)
Kettle Range Conservation Group
The Mountaineers
Willapa Hills Audubon Society

Norhtwest Rivers Council
Puget Sound Mycological Society
Seattle Audubon Society
Skagit Audubon Society
Spokane Audubon Society
Spokane Canoe & Kayak Club, Inc.
Spokane Fly Fishermen
Washington Mycological Society
Washington Native Plant Society
Washington PIRG
Whidbey Audubon Society

Alaska Coalition of Oregon

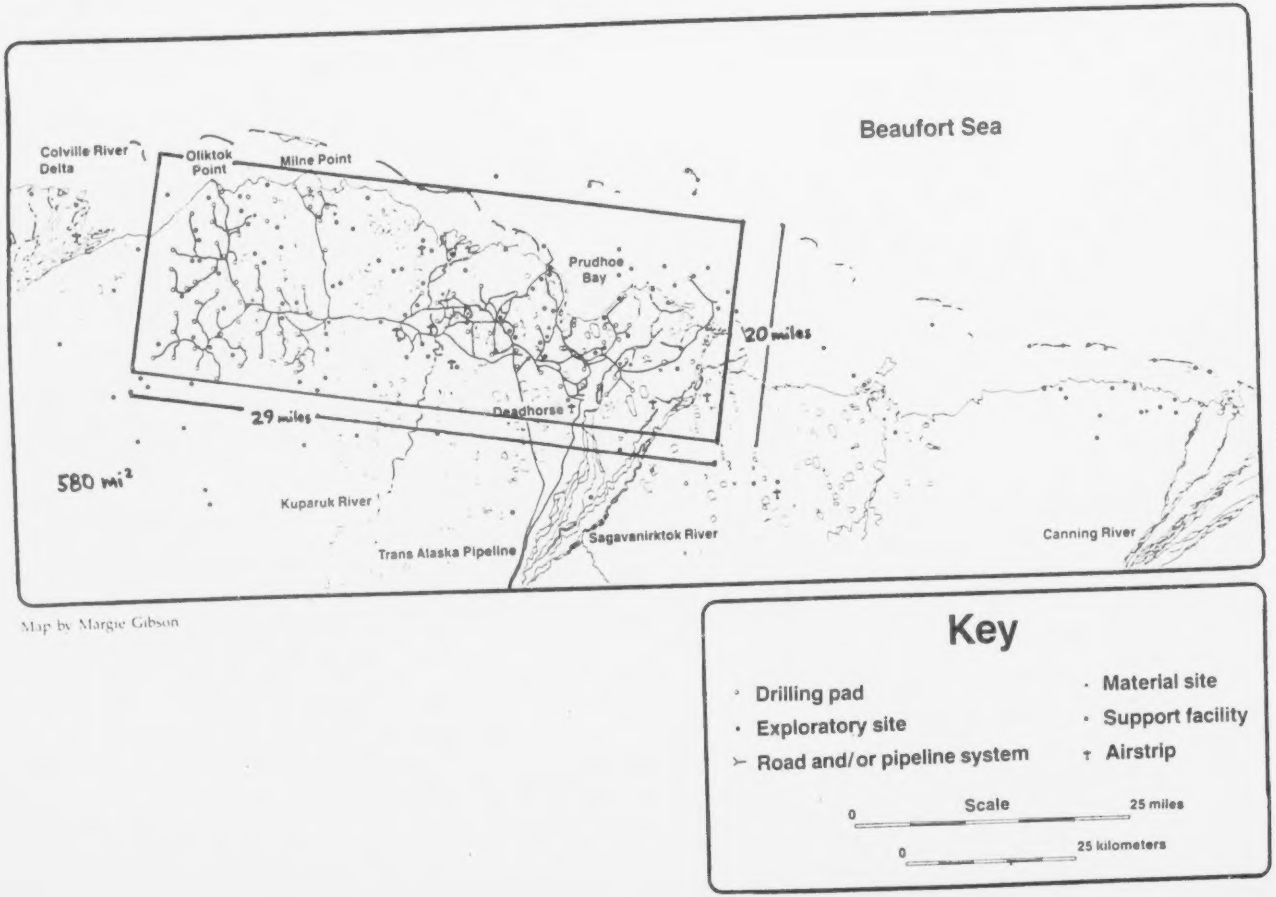
American Alpine Club
Dehen Knitting Company
Ecola Education Associates
Environmental Action Group, Lewis & Clark Coll.
Mazamas
Northwest Rivers Council
Portland Audubon Society

1,000 Friends of Oregon
Oregon Environmental Council
Oregon Natural Resources Council
Oregon Trout
Solar Energy Association of Oregon
Trail Club of Oregon

Other organizations supporting the goals of the Alaska Coaltion include:

International Union for the Cosnervation of Nature
Religious Action Center of Reform Judaism

MAP C


Beaufort Sea
Colville River Delta
Oliktok Point
Milne Point
Prudhoe Bay
Deadhorse
20 miles
29 miles
580 mi²
Kuparuk River
Trans Alaska Pipeline
Sagavanirktok River
Canning River
Key
Drilling pad
Exploratory site
Road and/or pipeline system
Material site
Support facility
Airstrip
Scale
0
25 miles
0
25 kilometers

Map by Margie Gibson

The CHAIRMAN. Thanks.

Mr. Herrera.

STATEMENT OF ROGER C. HERRERA, EXECUTIVE CONSULTANT, BP EXPLORATION (ALASKA) INC., ANCHORAGE, AK

Mr. HERRERA. Thank you, Mr. Chairman.

It is always a pleasure to appear before you, Mr. Chairman. I am going to try and say something different this time, certainly different from what we just heard from Mr. Matz.

I will curb myself in answering some of the things that he mentioned, including some of the rather wishful-thinking figures on his chart. But let me really talk for the next few minutes, and I will make this brief, on what has happened in the last 2 years, since we addressed this issue.

Things have gone on, on the North Slope. Technological advances have occurred, and perhaps, which I will mention, because they are pertinent to what we can expect, if we are allowed to operate on the coastal plain.

Perhaps the most outstanding new knowledge, though, has been gleaned from biological research, and research of the physical environment at Prudhoe Bay. I think it is true to say that there is more of that going on now than we have seen over the last 20 years on the North Slope. And goodness knows, it has been a progressive effort of the oil industry and the Federal and State governments, of course, to gather information.

Principally, in the last few years we, I think, have made great advances in our knowledge of caribou and Mr. Turner alluded to that. Now we have 19 years of data, for example, all of which is pretty hard data on the porcupine caribou herd. Perhaps we do not know all the answers to how that herd will react, but I think our degree of comfort in forecasting in forecasting its reaction to our development now is much higher than it has ever been before.

The one thing I find very interesting, though, Mr. Chairman, is the research and the results of the long-term on rehabilitation and on vegetation in the arctic and disturbing it and trying to reclaim disturbed areas. This also has been going on for 19 years, albeit in a very quiet way. I mean, there have been plots of ground which have been routinely examined every year for 19 years up there, so there is a long history of exactly what happens when tundra is disturbed and plants naturally reclaim the area.

More importantly, though, in the last few years, several new 10-year programs have been initiated on the basis of that previous knowledge. And they are showing great gains in practical know-how to enable us to start the effort in due course of reclaiming disturbed tundra, whether it is gravel areas or just scarred areas, and I think what we can now assuredly do, and have demonstrated in the last couple of years, is show an ability to take an expiration pad or a development area and clean it up and either, if it is so desired, remove the gravel and get the tundra mat underneath growing back and to healthy environment, or in fact accepting the observation that is now becoming more and more clear that gravel itself creates a viable environment there. So modifying the gravel rather than taking it up and coping with the problems associated with taking up many millions of cubic yards that have been put in place—modifying that gravel to create new dry habitat in what otherwise is a wetland.

These experiments and the results of this work are really showing practical ability to cope with the rehabilitation, which I know has been a concern of yours, and it is something which was not proven until now. I think now, increasingly, we can see that ability can be proven.

And so, to some extent, I think the discomfort with what to do with abandoned, perhaps 50 years in the future, is less so and will become increasingly less of a problem, as this research continues.

One other aspect of research on the North Slope, which is probably new, or at least a technological development, and that is the understanding of diminishing footprints, and the understanding of treating of waste products. And as you well are aware now, instead of the usual 44 acre pad, we have built and are operating on a pad in Prudhoe Bay field, which supports the same number of wells as the bigger pad, which is only 13 acres. That pad has done away with the reserve pits. We now cope with the usual waste materials that go into reserve pits by grinding it up, grinding up the rock cuttings, making a slurry and injecting that resulting fluid down into a proved geological formation beneath the permafrost.

This is a much cleaner way of coping with those products than we have ever had in the past, and obviously is one that will be utilized in future developments. The management of waste in general has also been subject to a lot of concern and study. What we have come up with for Prudhoe Bay, which in fact will be available for all entities on the North Slope, presumably including whatever development happens on the coastal plain, and that is the design and presently the permitting of a waste management facility, which will be a state-of-the-art facility, nothing else like it in the world, really, which will cope with everybody's waste material.

Its prime purpose will be to recirculate and reuse that material, make it reusable. But if it is not reusable, it will process it in a way which makes it benign. This is expected to be on-stream by 1994.

Mr. Chairman, I just want to make a couple of points with regard to your bill. I think it is a good bill, probably better than any of the previous ones that you have passed through this committee. It is a very tough bill, I think, as far as its protection of the environment is concerned. But I think, nevertheless, there are one or two small items which could be improved in it.

Already you heard a comment from the Department of the Interior regarding the definition of significant adverse effect. I have no problem with that standard. I do have a problem with the sort of definition which was put in the previous two bills passed by this committee, and I suspect that it could be clarified and make it more litigation-proof, without lowering the standard at all. There is suggested language in my written comments.

A couple of other points, and that is that you do tend in some of the language of the bill to put stipulations into a very cast-iron form, and my message, if I have one today, is that research is always improving environmental protection. Therefore, to state a stipulation in the legislative language, which is there and shows no flexibility, I do not think is a very productive way of protecting the environment, because probably next year that stipulation will be old-fashioned, and we have a better way of achieving the same protection that it is the aim to achieve, and therefore I would urge that some flexibility is put into some of the language.

One other point, and then I will stop. I think the Federal and the State of Alaska, the lease owners, would be better served if the bill took note of the advantage to both sides, the lessees and the lessors, of as much information as possible prior to the lease sale being available to the bidders. I mean, that way your bids are going to be more accurate, and you as lessor are going to get more a true value of the actual leases.

I would suggest that, given the past experience of control seismic development on the coastal plain, that it would be quite viable for the bill to allow detail seismic over the already delineated geological structures to be carried out before the lease sale. This would help both sides, and I think would be a far more beneficial result, as far as the ultimate of finding oil on the coastal plain than not allowing such further seismic.

My one other point, Mr. Chairman, I made to you before, and you have rejected it. But I make it again, because I still think it is a valid one. And that is again, if you want to maximize a value from this area, both in oil and in cash bonus bids, I think the first lease sale should open up the whole of the 1.5 million acres to leasing. Obviously, not all of that will be bid upon, in fact probably only a relatively modes proportion.

But I think the results, as far as being able to plan the consolidation of facilities after exploration and discoveries result, will be far more beneficial to the environment than having phase leasing as is proposed.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Herrera follows, additional materials submitted have been retained in committee files:]

Testimony
of
Roger C. Herrera
Executive Consultant, BP Exploration (Alaska) Inc.
to the
Senate Energy and Natural Resources Committee
March 12th 1991

regarding
The National Energy Security Act 1991
Title IX
Oil and Gas Leasing in the Arctic National Wildlife Refuge.

Mr Chairman, members of the Committee,

My name is Roger Herrera. I am a long time resident of Alaska and have spent about 20 years of my career with BP Exploration working in arctic regions. You have patiently listened to me on several occasions in the past on the subject of the coastal plain of the Arctic National Wildlife Refuge. But today I do not wish to repeat the points in that previous testimony, pertinent though they may be, but rather concentrate on new aspects of the situation in the arctic which have developed in the past two years and are relevant to the debate.

I would also like to use this opportunity to make a few observations, on behalf of the American Petroleum Institute and the Alaska Oil and Gas Association, which I represent today, on aspects of Title IX of S. 341, the National Energy Security Act of 1991.

Written Testimony

As accompanying written testimony I submit for the record, with your permission, Mr Chairman, comments on the current oil situation, changes to it which can be expected in the future, and an assessment of where ANWR oil fits into this picture and how it can benefit the nation's wellbeing.

More directly specific to the coastal plain is a new environmental booklet, hot off the press, which discusses broad ranging issues of concern to the coastal plain such as new exploration technologies, the latest data on air quality, availability of water, wildlife issues, and consideration of the aesthetics of wilderness. It gives a good update on the huge quantity of physical and biological research and monitoring which has been ongoing in the Alaskan arctic. Finally, there are a couple of interesting white papers which review 19 years of data on calving of the Porcupine Caribou Herd and the haphazard use of the so called "core calving area". The second of the papers discusses the free movement of caribou between herds in the arctic.

I leave you to judge these reports for yourselves, but, personally, as an Alaskan, I find the added knowledge and information which is continually being collected from the region, to be good news. It constantly suggests that the development of the rich oil resources beneath the coastal plain can be responsibly carried out without detriment to the regions wildlife, or to the health of the ecosystem in general.

Comments on Title IX - the ANWR Bill.
We all now accept that protecting the environment is not just a duty or altruistic action, but critical to human survival. However legislation to protect the environment, which is a large component of Title IX of your bill, must be more than well meaning, it must also be appropriate.

In general, Mr Chairman, you have achieved that requirement. However developments over the past two years illustrate how quickly new techniques and understanding can radically improve the protection of the environment in a manner sometimes not forecast by legislation. It is critical that your bill be sufficiently flexible to allow such advances to continue. Let me illustrate my point.

Gravel research - reclamation
The progress made in the rehabilitation and reclamation of abandoned gravel facilities on the North Slope has been startling. A series of long term experiments on revegetation techniques in the Prudhoe-Kuparuk area are giving practical answers. These have been used to restore abandoned exploration pads with great success. (There are photographs in the Environment Book). Gravel has also been successfully removed from the tundra on a small scale, with resulting good rehabilitation of the vegetative mat. However the technique is extremely expensive costing an average of $84/cubic yard removed.

This cost and associated benefit has to be considered in the light of recent studies evaluating wildlife use of abandoned gravel sites. These studies show considerable use of the gravel areas by birds, caribou and other wildlife. In fact the use of the gravel is usually greater than the use observed on undisturbed sites (both tundra and natural alluvium) of similar size.

In view of this new knowledge, Sec 9502, dealing with standards for land reclamation, may be biologically counterproductive in demanding total removal of all gravel structures. Aesthetically it may be desirable to move much of the gravel, but improving the biological habitat by leaving some gravel in place is an option which should be available to the Secretary of the Interior - because it makes sense.

Inflexible stipulations

Similarly Title IX lacks flexibility in its determination to retain the twenty-nine stipulations listed in the F.E.I.S. (April 1987). It can already be argued that some of these are old fashioned and need to be changed. They should be judged and used on their merits at the time each exploration or development project is proposed, not blindly accepted as law, good, bad or indifferent.

Footprint

Another significant operational change which has become reality in the past two years, is the establishment of the first production pad on the North Slope which does not utilize a reserve pit for the storage of waste products from the drilling operation. The new 13.5 acre P-pad in the Prudhoe Bay field is 70% smaller than a traditional Prudhoe Bay drilling site, but supports the same number of wells. A "cuttings grinder" allows drilled rock cuttings to be crushed into a slurry with the drilling muds, and the resulting liquid reinjected into isolated geological formations. This eliminates the need for a reserve pit and reduces the footprint of the pad.

Significant adverse effect

This smaller pad is obviously a superior technique which has no significant adverse effect on the environment. However the standard of "no significant adverse effect" is set out in Subtitle D, Sec 9401 (a), as a requirement for authorized coastal plain activities. But it is not defined. Previous ANWR bills passed by this Committee in 1988 and 1989 also used that standard. It was vaguely defined in the report language to those bills, but the definitions were sufficiently woolly to invite litigation.

I would suggest, Mr Chairman, that the definition contained in the Administration's National Energy Strategy, 1991, is much more viable. It is,

> "*significant adverse effects* means those effects which, despite the reasonable application of mitigation measures, if any, involving appropriate technology, engineering, and environmental control measures, including siting and timing

> restrictions, would result in widespread, long-term reductions in habitat quality or availability that cause, or are likely to cause, a widespread, long-term reduction in the natural abundance of any species of fish, wildlife, or plant".

I commend this change to you.

Lease sale bidding and consolidation of facilities There are two other aspects of Title IX which are deserving of change. These relate to the collection of geoscience data both before and after the first lease sale, and the nature of the lease sales themselves.

Ideally the competitive cash bonus bidding process which is proposed, should result in the federal government and the State of Alaska receiving close to true value for each lease. Obviously this is not exactly possible because of the numerous uncertain factors such as the actual amount of oil underlying any given lease, and the future value of that oil. Nevertheless it would not be in the best interest of the landlord to receive inflated cash bonus bids which were significantly higher than the value of the leases. This should be self-evident. It would prevent the safe, profitable production of oil from the area, which is the only purpose of a lease sale.

Somewhat different to the above consideration, but related to it, is the important concept of the minimization of the impact of development on the coastal plain of ANWR, and the consolidation of facilities. These are dominant goals aimed at protecting the environmental values of the region.

How can these two important requirements - correct valuation of leases plus minimization of environmental impact - be achieved? The answer lies in allowing (by language changes in Title IX) detailed pre-lease sale seismic to be obtained in the most favorable geological areas of the coastal plain, and then allowing the whole area to be nominated for selection for the first lease sale, without acreage constraints. The more information that industry has the more likely it is that winning bids will be close to true value. This is the rational for pre-lease sale detailed seismic. If all the best acreage is included in the first lease sale, there will be a huge incentive for separate leasees to cooperate with each other and carry out a more efficient exploration drilling program. This will be unlikely if high value unleased acreage remains to be bid upon. Also, the more acreage leased in the first lease sale, the sooner the oil prospectiveness of the area is ascertained, and the better plans for consolidation and sharing of facilities will be.

The present proposed system of phased leasing discourages, for competitive reasons, the sharing of information. This will make accurate bidding more difficult, and also adversely affect both the timing of development and the consolidation of facilities. It should be changed.

Waste Management Facility

A major technological advancement which will benefit all future development on the North Slope has been the design of a state of the art Waste Management Facility at Prudhoe Bay. This plant is presently being permitted and is expected to be in operation by 1994. It will be able to handle and treat production wastes which cannot be injected underground. It will also treat wastes generated by oil field service companies and others, and will emphasize beneficial recycling of products.

The positive impact of this plant should be immediate. It is expected to cost $150 million and it exemplifies the willingness of the operating oil companies to seek out the best solutions to arctic environmental problems ahead of imposed regulatory requirements.

The Arctic Ecosystem

The technological changes and scientific advancements which have been discussed above are all part of the evolution of man's role in the arctic. We often hear of concern for the ecosystem represented by the ANWR coastal plain, but that ecosystem must include the position of man. Ecosystems change constantly, they are always evolving. We do not see sabre toothed tigers or woolly mammoths any longer in the arctic. I am sure that some people are sad about that, but it illustrates the dynamic nature of the natural system. Similarly caribou herds grow and decline independent of man. In prehistoric times the ancestors of the Inupiat migrated into the coastal plain, previously uninhabited. In more recent times Alaskans built airstrips and Distant Early Warning radar stations. The permanent settlement of Kaktovik was formed. Recreationalists float the Hulahula River, sports hunters shoot Dall sheep.

All these have been changes to the ecosystem and some have been dramatic. For example, nesting snow geese and Muskoxen disappeared from the coastal plain. On the other hand, Eskimos no longer die of hunger, and Muskoxen have been successfully reintroduced.

We have all benefited from the oil produced from the adjacent area, wildlife populations thrive, tens of thousands of visitors have seen the arctic who would otherwise not have had that opportunity, and no wasteland has been created - except by nature in the dead of winter.

Man's intrusion into the arctic has been a success story. We are, as we should be, a living and caring part of the ecosystem. The arguments to exclude us from the coastal plain have no biological or ecological merit.

It is now possible to be confident that all resources of the coastal plain, wildlife, oil and gas riches, and aesthetic pleasures, can be protected or utilized in a responsible manner. The National Energy Security Act of 1991 will ensure that that capability is used for the benefit of all Americans.

Statement of
Roger C. Herrera
Executive Consultant
BP Exploration (Alaska), Inc.

on behalf of the

AMERICAN PETROLEUM INSTITUTE
and the
ALASKA OIL AND GAS ASSOCIATION

Regarding

Title IX, Oil and Gas Leasing in the
Arctic National Wildlife Refuge,
S. 341, The National Energy Security Act of 1991

Before the

Committee on Energy and Natural Resources
U.S. Senate

March 12, 1991

Washington, D.C.

Summary

o The oil price fall of recent years already has caused a substantial increase in U.S. dependence on imported oil. Imports have risen from about 31 percent of total consumption in 1985 to nearly 50 percent in 1990. This trend could have serious adverse economic and national security consequences.

o Low oil prices through the second half of the 1980s have had devastating effects on domestic petroleum exploration and development. Exploration-production capital expenditures, drilling activity, and well completions all were far below their levels of the early 1980s.

o Energy projections of several authoritative groups based on different assumptions and techniques are in general agreement on basic trends: they expect U.S. oil consumption to increase and production to decline. The Department of Energy estimates that we could be importing more than two-thirds of our oil by the year 2010, assuming low oil prices.

o Greater demand for imported oil by the U.S. will increase the demand for oil from OPEC nations, which hold about 84 percent of the free world's oil reserves.

o If OPEC oil production expands as world oil demand rises and world oil prices consequently remain low, growth in U.S. oil import dependence will be accelerated. Greater U.S. oil import dependence means greater vulnerability to world oil supply disruptions and increased constraints on U.S. foreign and military policies.

o The coastal plain of the Arctic National Wildlife Refuge (ANWR) could contribute substantially to U.S. oil supplies and help to alleviate U.S. vulnerability. Overall production from other important fields in Alaska has begun to decline. Because of long lead times required for Alaskan exploration and development, a leasing program should begin now to ensure the timely availability of new supplies. If the nation waits until another crisis occurs before taking action, there would be no way for ANWR oil to help alleviate the crisis.

o The U.S. Department of the Interior (DOI) has concluded that if there is economically recoverable oil present in the area, there is a 95 percent chance for more than 0.6 billion barrels and a 5 percent chance for more than 9.2 billion barrels. The DOI's mean estimate for recoverable oil is 3.2 billion barrels. Only two oil fields ever discovered in the United States, Prudhoe Bay and East Texas, have had more than 3.2

billion barrels of recoverable oil. If the 9.2 billion barrel estimate is correct, ANWR could produce one million barrels of oil per day for 20 years. The reduction in U.S. oil imports would equal the savings that would be obtained by completely eliminating all oil use in residential and commercial buildings in the U.S. during those years.

o Development of the ANWR coastal plain's oil could provide important national economic benefits. (1) Economic activity would increase in finding, producing and transporting ANWR oil and in supplier industries. According to an economic analysis by Wharton Econometrics Forecasting Associates in May 1990, ANWR development could raise the U.S. gross national product by $50 billion and increase employment nationwide by 735,000 by the year 2005. (2) The stronger economy, as well as leasing and production activity in ANWR, would yield revenues to reduce the federal deficit. (3) ANWR would provide oil at lower real resource costs than the costs of imported oil. (4) ANWR oil production would reduce U.S. import demand, lower U.S. expenditures for oil imports, and improve the nation's international trade balance. This also could hold the future world oil price below the level that it otherwise would rise to, thus benefitting American consumers as well as consumers in other oil importing countries.

o Energy conservation can help to restrain the growth in oil imports, but an effective national energy policy cannot be built on conservation alone -- as both the proposed National Energy Security Act of 1991 and the President's national energy strategy correctly recognize. Because U.S. oil production is falling, if government works solely on the demand side, it would require massive intervention to stabilize imports in the 1990s. That is why a balanced approach -- encouraging economically efficient energy conservation on the demand side and removing unnecessary impediments to domestic production on the supply side -- makes sense. Authorizing the leasing of ANWR would be an important positive step.

o The petroleum industry's record in developing and producing oilfields on the Alaskan North Slope shows that such operations can be and are being conducted in an environmentally sound manner. The Alaskan experience also has improved the petroleum industry's ability to operate in harsh environments. In addition, following the Valdez oil spill in 1989, Alyeska Pipeline Service Company -- the consortium of oil companies that own and operate the Trans-Alaska Oil Pipeline -- has significantly strengthened its spill prevention and response capabilities.

o The ANWR coastal plain presents an exciting opportunity. Little is to be lost by permitting leasing. If commercially producible discoveries were not made, petroleum activities would cease, there would be no appreciable risk of environmental damage, and the land would be restored to a natural state. If commercial finds were made, the national benefits could be enormous.

Introduction

U.S. dependence on oil imports is increasing. Arresting this trend would require a variety of approaches, including development of the oil resources of the ANWR coastal plain, which the National Energy Security Act of 1991 proposes. Failure to arrest this trend would have serious national economic and security consequences. The following discussion first will explain why the uptrend in oil imports is occurring. Second, it will outline the major implications of greater import dependence. The discussion then will address how development of ANWR's coastal plain could significantly alleviate U.S. energy problems.

Recent Trends in Oil Consumption, Production, and Imports

The price of oil rose sharply in 1973-1974 during the oil embargo, and again in 1979-1980 in connection with the Iranian supply disruption. The price peaked in 1981, at an annual average of about $37 per barrel, roughly ten times its pre-embargo level. By the beginning of 1989, the price had fallen by 55-60 percent (and by about 67 percent after adjustment for inflation). A third price spike occurred following Iraq's invasion of Kuwait last August. Prices have now returned to pre-invasion levels.

In the late 1970s, largely in reaction to previous oil price increases, U.S. oil consumption began to fall and production to rise. Consequently, gross oil imports fell from their peak of 8.8 million barrels per day in 1977 to 4.8-5.2 million barrels per day during the 1982-1985 period. Imports were reduced from 47.7 percent of total consumption in 1977 to 31.5 percent of consumption in 1985.

Moreover, studies have shown that consumer and producer responses to higher oil prices would have been even greater were it not for U.S. price controls -- which limited the prices of domestically produced crude oil and oil products until 1981 -- and the so-called Windfall Profit Tax of 1980, which continued to prevent U.S. oil producers from obtaining the full benefits of the world price.[1] Fortunately, this tax finally was repealed in

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[1] See Joseph P. Kalt, The Economics and Politics of Oil Price Regulation in the Post-Embargo Era, Massachusetts Institute of Technology Press, 1981; and American Petroleum Institute, Domestic Petroleum Production and National Security, December, 1986.

1988.

Outside the United States, oil consumption fell substantially after 1979, while oil supplies were augmented by newly developed non-OPEC sources such as the North Sea, Mexico and Egypt. As a result of decreased oil import demand both in the United States and in the rest of the free world, demand for OPEC oil dropped by about 14 million barrels per day, or about 45 percent, between 1979 and 1985. After Saudi Arabia increased its output in late 1985, the price of oil collapsed. And although the price rebounded from the extremely low levels of mid-1986, it still is well below its late-1985 level.

After 1985, in response to the price drop, U.S. oil consumption generally rose and production fell. (In the latter half of 1990, consumption fell slightly due to rising prices as a result of the Persian Gulf crisis, mild weather, and a slowing economy.) Imports rose from 31.5 percent of total oil consumption in 1985 to 37.9 percent in 1986 to 42 percent in 1988 and to nearly 50 percent in 1990. In 1990, imports averaged about 8 million barrels per day.

Lower oil prices also have affected oil consumption and production outside the United States. Based on International Energy Agency data, non-U.S. free-world consumption outside of OPEC was up an average of almost 3 percent per year since 1985, compared with about a 2.5 percent average annual decline during the previous six years. On the supply side, non-U.S. free-world production outside of OPEC was up less than 2 percent per year since 1985, compared with about a 7 percent average annual rate of increase in the previous six years.

In summary, it is clear that the fall in oil prices has had a stimulative effect on U.S. and free-world oil consumption and a negative effect on non-OPEC oil production. In addition, as discussed in the next section, the oil price fall has so discouraged exploration and development in the United States that further declines in domestic oil production are likely.

The Effects of the Oil Price Fall on Domestic Oilfield Activity

The fall in oil prices and consequent decline in the profitability of oilfield investments has caused a sharp reduction in domestic petroleum exploration and development.

1986.

Domestic exploration-production capital expenditures by the leading oil companies decreased by about 25 percent between 1981 and 1985. In 1986, these companies cut their domestic exploration-production capital spending almost in half. The downward trend continued in 1987 before an increase in 1988. Domestic exploration-production capital spending in 1989 still was only about one-half the 1985 level and about one-third the 1981 level. Capital spending fell again in 1989 before increasing 14 percent in 1990. This year, it is projected to increase by 11 percent.

The number of rotary drilling rigs active in the United States fell from a high of about 4,500 in late 1981 to about 1,900 by year-end 1985. The rig count then tumbled to less than 700 in the summer of 1986. By late 1990, the number of active rigs rose to slightly under 1,200, partly in response to price increases.

Consequently, the number of wells completed in the United States decreased after 1981, falling by about 21 percent by 1985. Well completions plummeted nearly 50 percent in 1986, a drop of more than 30,000, the largest annual decline on record. And the decline continued in 1987 and 1988 as well completions fell by an additional 9,000 by 1989. Overall, well completions have fallen in the United States from more than 89,000 in 1981 to about 28,980 in 1990.

The net result of this decline in domestic oilfield activity is that the United States is not replacing the oil reserves that it uses up. Since 1985, the United States replaced only about 84 percent of the oil that was produced. This, of course, reduces the nation's ability to maintain production in the future. Indeed, despite major cost reductions and efficiency improvements within the domestic oil industry, it appears unlikely that the industry will be able to economically maintain current production levels if prices were to remain low.

The Likely Future Trend of Oil Imports

The American Petroleum Institute has reviewed a number of recent energy projections by government and private organizations in order to determine expected trends in U.S. oil consumption, production, and imports over the next ten years or so. Although the projections are based on different assumptions and techniques, they agree on basic trends: they expect U.S. oil production to decline, consumption to increase, and imports to rise considerably.

Projections prepared by the U.S. Department of Energy and published in its 1990 Annual Energy Outlook are representative. The department's "base case" looks for oil production including natural gas liquids production to fall from 9.8 million barrels per day in 1988 to 8.2 million barrels per day in 1995 and to 7.8 million barrels per day in the year 2000, assuming that the world oil price rises in real terms at an average rate of 4.1 percent annually. The department's alternative "low price" case, which assumes that the oil price will rise in real terms at an average of 2.4 percent annually, looks for production to fall to 7.5 million barrels per day in 1995 and to 6.7 million barrels per day in 2000. Even though the Department of Energy projects relatively slow growth in U.S. oil consumption -- 0.7 percent per year in the base case and 1.2 percent per year in the low price case -- it nevertheless expects oil imports to increase substantially. In the base case, net oil imports are projected to equal 50 percent of 1995 consumption and 53 percent of consumption in 2000. In the low price case, imports are projected at 56 percent of 1995 consumption, 61 percent of consumption in 2000, and 67 percent of consumption in 2010. (These figures are slightly lower than 1989 projections primarily because the 1989 report cited gross, as opposed to net, oil imports.)

Several factors support projections of a rapid rise in import dependence. The United States is a relatively high cost oil producer, and in all probability it cannot maintain production at prices like today's. In fact, the decline in production may begin to accelerate because Alaskan production -- in spite of recent, temporary production increases to help offset the cutoff of Iraqi and Kuwaiti oil -- will continue the long-term pattern of decline. Production from lower-48-state oilfields will also continue to decline.

In addition, federal policies in several areas -- including taxation, natural gas regulation, land access, and environmental regulation -- continue to inhibit domestic energy development. The long-term trend of rising consumption also is likely to continue.

Given all of these trends and factors, import dependence can be expected to grow.

Economic Costs of Increased U.S. Reliance on Oil Imports

Importing oil rather than producing it domestically imposes two types of costs on the U.S. economy. First, higher U.S. oil imports increase world demand relative to supply and hence tend to raise the world price of oil. Second, higher U.S. oil imports relative to world production capacity increase the probability of a sudden spurt in world oil prices and intensify the effects should some physical event shock the world market.

A growing U.S. demand for foreign oil translates, almost barrel for barrel, into a growing demand for OPEC oil because it is the OPEC countries that possess the excess production capacity needed to meet demand growth. Furthermore, most of OPEC's spare capacity is found within a single region of the world: the Persian Gulf. Production capacity elsewhere in the free world is not expected to change much over the next several years. Developing countries may produce somewhat more than they do now, but developed countries besides the United States are expected to produce somewhat less.

In the world oil market, the prospect for oil price increases depends to a great extent on the size of demand relative to the amount of capacity available to meet that demand. Studies by the U.S. Department of Energy, the National Petroleum Council, the American Petroleum Institute, and the Harvard University Energy and Environmental Policy Center have all suggested that growing consuming country demand will progressively absorb a larger share of available OPEC production capacity. If this occurs, the world oil market could tighten and prices could rise, perhaps very substantially. This, in fact, has been the historical experience. From 1974 until about 1985, the rate of increase in cartel prices varied directly with the rate of capacity utilization in the cartel.

The demand for OPEC oil has been generally increasing since the oil price collapse. If OPEC capacity stays at its pre-war level, the cartel could be utilizing 80 percent of its capacity in about three to five years, depending on such factors as the rate of economic growth in consuming countries over the next few years and the precise level of world oil prices. Thus, the world oil market may become much tighter in a relatively short time. (In fact, OPEC, excluding Iraq and Kuwait, is now essentially operating at capacity as a result of production increases to replace lost Iraqi and Kuwaiti production.)

However, the OPEC countries, and particularly those countries in the Persian Gulf, have shown they possess the resources to increase oil production capacity substantially. Should these countries choose to increase capacity over the long-term -- whether because individual countries seek to increase their market share, or for other reasons -- oil prices could remain relatively low for more than three to five years even if demand expands.

As a large net oil importer, the United States benefits from low oil prices. However, the longer low oil prices last, the greater the U.S. import dependence and the greater both the probability of an international supply disruption and the damage such a disruption would do to the United States.

Concentration of oil supplies in a politically unstable area like the Mideast increases the risks of a supply disruption. The United States can mitigate the impact of an unfavorable Mideast development on the world oil price, however, by reducing its demand for imported oil, thereby creating greater slack in world oil markets.

A disruption has the direct effect of transferring wealth from oil-importing to oil-exporting nations. In the current context, a cutback in foreign oil production that caused the oil price to rise by $10 per barrel would transfer from the United States more than $25 billion per year, or about one-half of one percent of the U.S. gross national product (GNP).

In addition to the wealth transfer effects of an oil supply disruption, researchers have estimated substantial additional costs. Econometric estimates of the overall macroeconomic effects of supply disruptions have been much larger than the direct wealth transfer effects. For example, simulations utilizing the macroeconomic models of Data Resources, Inc., Wharton Econometrics Forecasting Associates, and Lawrence H. Meyer Associates performed for the National Petroleum Council indicate that the 1973-1974 oil price jump reduced the U.S. GNP by about 2.5 percent within three years, while the 1979 price jump reduced U.S. GNP by about 3.5 percent within three years.

Therefore, to the extent that low oil prices or unwise public energy policies today increase U.S. import dependence, they create greater potential for a rise in oil prices with attendant economic losses for the United States.

National Security Implications of Increased U.S. Oil Import Dependence

Besides the economic costs of increased reliance on OPEC oil, such reliance can impose military and foreign policy burdens on the United States and other oil-importing nations. In brief, because of dependence on oil imports from the Mideast, the United States and other oil importers may have to make military commitments and adopt foreign policies that they might not otherwise choose.

Benefits From Developing ANWR Coastal Plain Oil

The oil industry's position with regard to development of the ANWR coastal plain is straightforward. (1) Based upon government estimates of oil potential, tne prospects for substantial finds of oil are excellent. (2) Development of the area's oil would provide significant national economic and security benefits. (3) Exploration and development can occur in an environmentally safe manner.

Oil Prospects on the ANWR Coastal Plain

The U.S. Department of the Interior (DOI) believes there is a 46 percent chance of finding economically recoverable oil on the ANWR coastal plain. The mean amount estimate is 3.2 billion barrels -- with a high-end estimate of 9.2 billion barrels. It should be emphasized that these are not estimates of the total amount of oil in the area, or the "in-place" oil, but rather are estimates of the economically recoverable oil. The in-place estimates are much higher -- 13.8 and 29.4 billion barrels, respectively. DOI has also estimated that the area holds huge quantities of natural gas (the mean in-place estimate is 31.3 trillion cubic feet), but the department notes that these resources may not be economic over the 30-year time period it considered. This may be so, but if production of such gas does prove economic in that period, each trillion cubic feet can provide the oil equivalent of 500,000 barrels per day for one year.

Opponents to opening the coastal plain to energy development allege that, in terms of total U.S. oil needs, the area would be likely to yield at most only a few months supply of oil. By this reasoning, no field has ever been or ever will be worth developing. Opponents of leasing fail to recognize that U.S. oil reserves are the accumulation of thousands of individual fields, that daily U.S. output is the sum of the contributions of those thousands of fields, and that many individual fields have been contributing to the nation's production over many years. The following facts put ANWR's oil potential in perspective:

o Using the mean estimate of 3.2 billion barrels of recoverable oil, the DOI estimates that the coastal plain would have peak production of 659,000 barrels per day. Such production would put this single area among the top 20 countries in the world in terms of crude oil production.

o The Interior Department's 3.2 billion barrel mean estimate of recoverable oil would make the area the third largest oil find in U.S. history -- exceeded only by the Prudhoe Bay field, which has produced about 7 billion barrels of oil, with expected total production to reach nearly 12 billion barrels, and the East Texas field (discovered in 1930 with an estimated 5.6 billion barrels of recoverable oil), which has produced about 5 billion barrels. If the department's high estimate of 9.2 billion barrels is realized, this would place ANWR close to Prudhoe Bay in the volume of oil discovered and would increase domestic crude oil reserves by one-third. In 1990, Alaskan production accounted for 25 percent of all the oil produced in the United States. Alaskan and East Texas fields are on the downhill side of their productivity.

o If ANWR were to yield one million barrels per day for several years (toward the high end of the estimated range but quite possible), the reduction in U.S. demand for oil imports would be comparable to the import reduction that would be obtained by completely eliminating oil use in residential and commercial buildings in the U.S. during those years.

Thus, the oil potential of the ANWR coastal plain is enormous. As the Department of the Interior's 1987 ANWR report (Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment) concluded, "The 1002 area [coastal plain] is the nation's best single opportunity to increase significantly domestic oil production over the next 40 years. It is rated by geologists as the most outstanding petroleum exploration target in the onshore United States. Data from nearby wells in the Prudhoe Bay area and in the Canadian Beaufort Sea and Mackenzie Delta, combined with promising seismic data gathered on the 1002 area, indicate extensions of producing trends and other geologic conditions exceptionally favorable for discovery of one or more supergiant fields (larger than 500 million barrels)."

Nevertheless, some have argued that ANWR should not be leased and that oil imports should be reduced by more energy conservation. While the petroleum industry fully supports the efficient use of energy in our economy, we are convinced that an effective national energy policy cannot be built on conservation alone. In reaching that conclusion, the American Petroleum

Institute has attempted to determine, based on historical experience, what levels energy prices would have to reach to induce various degrees of improvement in energy efficiency. Our analysis indicates that just to hold aggregate U.S. energy consumption constant through the rest of the century while economic growth continues at modest rates, the price of energy would have to rise to three to four times present levels. And if we were to seek to substantially reduce aggregate U.S. energy consumption, for example, by 10 percent by the end of the century, while still experiencing modest economic growth, the price of energy would have to rise to five to six times present levels.

As noted earlier, U.S. oil production has been declining and is expected to continue to do so. Thus, if government works solely on the demand side, it would have to intervene massively to stabilize or reduce energy imports. That is why it is important that the government take a balanced approach -- encouraging economically efficient conservation on the demand side but also removing unnecessary impediments to domestic production on the supply side.

National Economic and Security Benefits from Developing ANWR Oil Resources

If the area's recoverable oil resources turn out to be in the upper half of the 0.6-9.2 billion barrel range estimated by DOI, and full leasing occurs, peak oil production probably would equal at least one million barrels per day. It should be emphasized, however, that it takes as much as 10 to 15 years to explore for and place into production oilfields in hostile and distant environments such as the coastal plain area, which lies hundreds of miles north of the Arctic Circle. Even if ANWR leasing began expeditiously, peak production probably would not be achieved until the first decade of the twenty-first century. Given these realities, Congress should not wait until another oil crisis occurs to authorize leasing. In such circumstances, ANWR oil could not be found and developed in time to alleviate the crisis.

Development of the coastal plain would benefit the U.S. economy in several basic ways. First, according to an economic analysis prepared by Wharton Econometrics Forecasting Associates in May 1990, ANWR development could raise the annual U.S. gross national product by $50 billion and increase employment nationwide by 735,000 jobs by the year 2005.

Second, the larger national income from ANWR activity means a higher federal tax base and higher tax revenues. Also, federal leasing of the coastal plain would generate lease bonuses, and production from those lands would result in royalty payments, monies that would flow to the federal government as well as Alaska. Therefore, the leasing of the coastal plain would help to reduce the federal budget deficit by expanding the nation's economy.

Additional national economic benefits from ANWR development would occur in the future because ANWR oil production would reduce U.S. oil import demand and probably reduce the world oil price. Thus, ANWR development probably would provide national economic benefits in the form of lower future oil and other energy costs for American consumers. More moderately priced oil would make many U.S. industries more productive.

The total benefit to the U.S. economy is a combination of the benefits described above. The Interior Department has estimated that the net national economic benefits from ANWR production could reach $325 billion. In addition, to the extent that ANWR oil development can add to U.S. supply, it will improve U.S. energy security and increase the flexibility of U.S. foreign policy. First, a significant level of ANWR oil production will reduce the chances of a foreign supply disruption that would have a sharp impact on the world oil price, since less U.S. demand for oil imports will increase slack in world oil markets. Second, should there be a disruption of world oil supplies, the costs to the U.S. economy will be reduced if U.S. oil import demand is less relative to its total oil supply. Finally, less U.S. dependence on foreign oil allows U.S. foreign policy to be more flexible and strengthens relationships with oil importing allies.

Environmental Considerations

Only a small portion of the ANWR coastal plain would actually be disturbed during exploration and production. Based on experience at nearby Prudhoe Bay, less than one-tenth of one percent of ANWR would be affected by drilling and production pads, roads and other facilities. That is equal to an area about the size of Washington, D.C.'s Dulles Airport. The petroleum industry's record in developing the producing fields on the Alaskan North Slope provides solid evidence that such operations can be and are being conducted in an environmentally sound manner. The advanced technology developed from arctic operations near Prudhoe Bay -- the area of the nation's largest oil and gas fields -- can be used within ANWR in the search for the large deposits of crude oil.

Numerous state and federal laws and regulations assure that oil and gas activities are designed to protect the environment. And 20 years of experience on the North Slope demonstrate that oil and gas exploration and development can exist in harmony with the arctic environment. Techniques to minimize disturbance include directional drilling, smaller and consolidated facilities, winter construction, use of special arctic equipment, and elevated and ramped pipelines. The U.S. Fish and Wildlife Service (USFWS), which monitored all of the surface activities and geophysical operations conducted on the North Slope, reported that no significant environmental impact resulted from that activity.

Oil from the coastal plain would be transported by onshore pipeline to the existing Trans-Alaska Pipeline system (TAPS), which probably would have substantial surplus capacity when ANWR production begins. Experience from TAPS and the Prudhoe Bay, Milne Point and Kuparuk developments indicates that pipelines can be designed, constructed and operated on the North Slope to allow passage of caribou and other wildlife.

Development at Prudhoe Bay, Kuparuk, and Milne Point in the calving range of the Central Arctic caribou has not had a harmful effect on this caribou herd. According to U.S. Department of the Interior data, the herd grew from about 3,000 animals in 1970 to about 18,000 in 1990. This experience is reason to believe that development on the coastal plain would not hurt the porcupine caribou herd. The coastal plain is only a portion of the calving grounds of the porcupine herd. Even discovery of a supergiant field would only involve a small portion of the area. And, in some years, little or no calving occurs there, but takes place in the foothills to the south or in Canada.

Coastal plain facilities would also require air quality permits and be forced to meet air quality standards to operate. Air quality monitoring at the large Prudhoe Bay facilities and the other North Slope oilfields shows that oil and gas operations at these locations fully meet state and federal air quality standards.

In addition, protection of the environment would be ensured by the new federal oil spill law, the nation's new oil spill response company -- the Marine Spill Response Corporation -- and improvements in Alyeska's spill response capabilities. Alyeska Pipeline Service Company, the consortium of oil companies that own and operate the Trans-Alaska Oil Pipeline, has implemented a much expanded tanker spill prevention and response plan that emphasizes prevention of spills and rapid response should a spill occur. Six specialized vessels, as well as tugs, barges, spill containment and recovery equipment, and highly trained personnel now are in service or on call 24 hours a day in Prince William Sound. Every tanker carrying oil is escorted through the Sound by two large emergency response vessels.

Finally, the petroleum industry recognizes that there is some chance that the ANWR coastal plain will not contain economically recoverable quantities of oil. However, if this occurs, petroleum exploration would cease and restoration measures would begin. And if economically significant oil and gas discoveries were made, the occupation of the area would last only as long as those discoveries were producible, perhaps 30 to 40 years -- a very short time in man's historical use of the area. Once operations ended, the land would be restored to a natural state. Thus, there is little to lose by permitting leasing and development and potentially a great deal to gain.

In conclusion, development of the coastal plain is key to the nation's energy security and would occur with respect for the environment. Title IX is, therefore, a critical and essential part of the National Energy Security Act of 1991.

The CHAIRMAN. Thank you very much, Mr. Herrera.

Mr. Yeager.

STATEMENT OF BROOKS B. YEAGER, VICE PRESIDENT FOR GOVERNMENT RELATIONS, NATIONAL AUDUBON SOCIETY

Mr. YEAGER. Hello, Mr. Chairman. I want to thank you for the courtesy of inviting me to testify today.

Your staff asked that I address myself primarily to energy issues in relation to the arctic, and so that is what I have included in my statement, which I will submit for the record.

Before I started, I wanted to say, since I have not had a chance to say this to you personally, that the issue of today's discussion is a great American natural resource on which, the disposition of which you and we in the environmental community have disagreed.

But I wanted to thank you on another issue, which you pursued last year on another great resource, which you help to protect, and on which we did agree, and that was the Tsongas National Forest.

The CHAIRMAN. Thank you very much.

Mr. YEAGER. And I see a lot of members of your staff that have been here today that also helped in that effort, and I wanted to take the opportunity to thank you for that.

I am going to submit my statement for the record and try to respond to some of the things that have been said. A lot of things have been said, and some of them were accurate and some of them were a little bit less than accurate, I think.

But in particular you made a statement earlier that I though was absolutely accurate, and that was about the frustrating inability of the United States to convene a National Energy Strategy that over time has really made any sense in terms of our dependence on oil as a primary energy resource and as part of that dependence on foreign oil.

I would only add to that, which is absolutely true, that one of the reasons that, in our view, previous efforts have been unsuccessful, is the reason that Senator Bradley pointed out, and that is that we have steadfastly ignored the fact that we no longer can control the price of oil through our own production. We no longer have a reserve base that in relationship to the world reserve base is capable of leveraging the international price of oil, no matter how much we develop it.

So when we say, and when we make the argument, and I do in my testimony, that drilling and producing oil and gas from the Arctic National Wildlife Refuge, if there is some there, will not fundamentally alter our relationship to the world oil market or our dependence on foreign oil.

It is related to another argument that I make, that our ability as a Nation to sustain any level of production is primarily dependent on the world oil price. It is not primarily—we are not running out of oil in the United States. Agreed, we are a mature oil province, our oil is more expensive to get. In the case of arctic it is more remote. In the case of tertiary or oil that remains in existing reservoirs is just more expensive than Middle Eastern oil is.

But the underlying reality is that the addition of a reserve, even if it is a large one in Alaska, to the U.S. reserve base, will not change the fundamental reality that our ability to produce oil as a Nation at any given level is subject to the world price of oil. The reason, as you know very well, coming from Louisiana, the reason that our production is down so significantly since 1985 is not because oil wells have run dry. It is because wells have been shut in, wells have been capped, because it is not economical to produce them.

The CHAIRMAN. It is both.

Mr. YEAGER. I think I would be glad to go back to some earlier testimony that I gave, and that others have given, and talk about what remains in existing reservoirs, including citations that we have made previously to some studies by the Texas Bureau of Economic Geology, that showed the degree to which our ability to get oil from existing reservoirs is price dependent.

The CHAIRMAN. Oh, I see your point. Yes, I mean, the wells are not dry in the sense that there is still some oil down there; it is just not recoverable.

Mr. YEAGER. At a somewhat different price, lots more would be recoverable, that is the point.

The CHAIRMAN. That is fair.

Mr. YEAGER. Dr. Fisher from the Texas Bureau makes, consistently. In fact, he predicts that at a steady price of $25 a barrel, 48 billion barrels of oil would be recoverable in the lower 48, in addition to what is considered recoverable right now.

The second point I wanted to address myself to, now, and I am sorry that Senator Wallop is not here anymore, but he had made the point that to him it was inconceivable that we as a Nation would place off-limits a resource that is potentially a large energy resource at a time that we have a need for energy resources. I can only reply to that that one of the greatnesses of our country is that we have consistently made the decision to place off-limits certain kinds of resources, when we though that they were more valuable for other purposes, that we have made the decision to place off-limits the Grand Canyon, despite its hydro-electric potential.

We have made the decision to place off-limits the thermal power that is available in Yellowstone National Park, and even the contiguous area of Island Park, because we think the other values of those areas are more significant. After World War II we made the decision to place the Olympic National Park lands off-limits to timber production, even though there was a very, very drastic need for timber production to house returning veterans and their families.

But over time we have shown a willingness to make a decision as a Nation to put future generations, the future shape of our Nation, and the vision of what we want it to be, including its natural resources, ahead of our perceived present need. And I think in general those decisions have been wise ones, and ones that we can be proud of.

The third point I wanted to address myself is the point that Secretary Watkins made. He made several points, but in general they were to show in his view the importance of the oil resource that he stipulated, or speculated is available underneath the arctic coastal plain. And I wanted to echo what Mike Matz said, we are all very interested to see the new figures from the Department of the Interior and the Energy Department. None of us have been able to see them, so we cannot really respond to them in detail.

The CHAIRMAN. I have not seen those, either.

Mr. YEAGER. Well, I suspected that you had not, and I am sure that you will want to examine them also. But it seems to us that they are, if anything, enormously politically convenient, and I am not aware of an awful lot of geological activity that has taken place on the coastal plain since the last assessment in 1987. So I can only say that I am somewhat skeptical of the new figures.

The CHAIRMAN. I was skeptical of the old figures, too.

[Laughter.]

Mr. YEAGER. Well, it is probably a healthy skepticism, Mr. Chairman.

The other point that I would make about Secretary Watkins' point of view, is that he pointed to the centrality of the Arctic National Wildlife Refuge in the President's energy plan. And we agree with that, that is that the fate of the Arctic National Wildlife Refuge is unfortunately very central to the President's energy plan.

But we think that is a problem; it is a tragedy. What it means is that in terms of oil security the President's national energy plan is a gamble. It is a riverboat gamble. If there is no oil in the Arctic National Wildlife Refuge, there is no real plan.

And I think that is a failure of imagination. It is a failure of nerve, and it is a failure of political will. And I am actually surprised that they would come and defend it as the strength of their plan before this committee.

It seems to me that, going back to the points that Senator Bradley made, we in fact as a Nation do know what to do about oil and our relation to the world oil market. We did it between 1976 and 1985. We suppressed demand off projected levels by large percentage, which I have cited in my testimony, and I will not go back and try to find them now.

And in doing so, we won a decade-long war with OPEC. We set them back on their heels. They were unable to enforce a world oil price above $12 a barrel at one point in 1986 and 1987. It was not because we drilled the Arctic National Wildlife Refuge. We did not.

It was because we were able to control demand. We passed the original CAFE law. We passed a number of laws designed to move us off of oil as an electricity resource. We went through a change in our economy that gradually meant there was less manufacturing demand for oil in the Northeast and the Midwest than there had been earlier. We made a number of changes as a nation, that in their total effect were very powerful on our relationship to OPEC.

We in the environmental community believe that we can do that again. We wrote to the President in December of last year We suggested, and I have enclosed the letter for your committee's record, we suggested to him the goals of what we thought would be a credible National Energy Strategy, and one that would meet the challenges that we face now, which are not the same challenges that we faced 10 years ago.

We made the point that energy security in the sense of oil security, and the security of our oil lifeline, to some extent has been a problem has been a problem that we have been dealing with. This committee can be proud of its efforts on the Strategic Petroleum Reserve, and of other efforts it made to increase energy efficiency over time. Those efforts made a difference.

The fact is, we have just gone through a Persian Gulf War, and despite the tragedy of the conflict, which is real, and the risk that we endured, which was real, and the harm that has come to people, which is real, the price of oil is not projected to go up. The price of oil is projected to go down.

Part of that has to do with efforts that you made, that we made in the past, to deal with issues other than U.S. drilling capacity. They were issues of our ability to influence our demand in the world oil market.

What we suggest—and I will not go through all the goals that we stipulated in our letter to the President—is that that should be the thrust of our energy policy, that we should be making serious gains in energy efficiency, that we should be trying to wean ourselves from oil over time. And we do not agree with Secretary Watkins that we do that by taking one last fix in the Arctic National Wildlife Refuge, and paying for our methadone program out of the proceeds.

No, if we want to wean ourselves, let us avoid the environmental damage that comes from new drilling in wildlife-rich areas. Let us try to find ways to increase tertiary production, and in fact, we think that there may be ways that are more powerful than the ways that are contained in the President's National Energy Strategy.

Let us go back into the fields in the lower 48 and get more of what we can get out of those, but let us do the real things that we know how to do.

Let us double American fuel economy, for automobiles and light trucks in the next 10 years. We did it before. All the analysts say that the technology is there to do it, or come close again, and we believe that Congress, in enacting the last CAFE law, did a very bold thing. It forced the technology a little bit. You did not accept the last time what you were told by the auto industry could be done. Or by the ERDA or whoever was the DOE at that time.

You forced the technology somewhat, and they came through. And we believe that that can happen again. We believe that that kind of a strategy, combining an aggressive push on auto fuel economy, an aggressive push on mass transit, an aggressive push on buildings efficiency, will not only have the benefit of allaying the need, the perceived need to develop the Arctic National Wildlife Refuge and some coastal areas that we think are more valuable for other purposes—but will put us on a road where we can meet with other challenges that we are not effectively meeting now.

Our failure to compete with the Germans and the Japanese on energy efficiency, our failure to be able to do anything meaningful about our carbon dioxide emissions—those are the things that you have the opportunity to start dealing with now, in your National Energy Strategy. But if you hinge your hopes on the Arctic National Wildlife Refuge with the President, we think you will not be able to do that.

[The prepared statement of Mr. Yeager follows:]

National Audubon Society

NATIONAL CAPITAL OFFICE 801 PENNSYLVANIA AVENUE, S.E. WASHINGTON, D.C. 20003 (202) 547-9009

STATEMENT OF BROOKS B. YEAGER

VICE PRESIDENT FOR GOVERNMENT RELATIONS

NATIONAL AUDUBON SOCIETY

REGARDING Title IX of S.341,

THE ENERGY SECURITY ACT OF 1991

LEGISLATION TO OPEN THE COASTAL PLAIN

OF THE ARCTIC NATIONAL WILDLIFE REFUGE

FOR OIL AND GAS DEVELOPMENT

BEFORE THE SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES

HONORABLE J. BENNETT JOHNSTON, CHAIRMAN

MARCH 12, 1991

Mr. Chairman, Members of the Committee,

Thank you for the invitation to testify before you today on the question of whether to open the coastal plain of the Arctic National Wildlife Refuge for the development and exploration of crude oil and natural gas. My name is Brooks B. Yeager; I am Vice President for Government Relations at the National Audubon Society.

The mission of the National Audubon Society is to protect wildlife and wildlife habitat, and the environment upon which our lives depend. With the support of more than 600,000 members and an extensive chapter network in the United States and Latin America, Audubon draws on the enthusiasm and power of concerned citizens to save our threatened ecosystems. Audubon members and staff .engage in a broad range of scientific and environmental policy studies, research projects, and conservation efforts aimed at improving public understanding and appreciation of wetlands, wildlife habitat, energy and pollution policy issues, and a host of other environmental concerns. We also reach out to the broader public, through our well-known TV specials, and a special educational effort in inner city classrooms.

Mr. Chairman, my testimony today concerns the future of a great American natural resource, on the desired disposition of which we fundamentally disagree. But before I begin, I would like to express my appreciation for your efforts to protect another great American natural resource, on the future of which we did and do agree. I mean the Tongass National Forest, and I would like to take this opportunity to thank you and your staff, as well as Senator Wirth and the other members of the Committee, for the great achievement you enacted last year in the Tongass Timber Reform Act.

THE NEED FOR A NATIONAL ENERGY ENERGY STRATEGY

On December 7, 1990, eighteen environmental, safe energy, and religious organizations, including the National Audubon Society, wrote to President Bush, calling on him to bring forward a National Energy Strategy designed to to begin moving the country to a much brighter and more secure energy future. I have attached a copy of the letter for the Committee's record.

Clearly, the United States faces an energy crossroads. Thousands of American men and women are only now returning from the conflict in the Persian Gulf -- a conflict fought, at least in part, over the control of oil. A little more than a month ago, the United States hosted a difficult first negotiating session for a global climate protection agreement. The path we take on energy now will determine whether there will be more wars for oil, whether we can contribute to the protection of the world's climate, and whether we can continue to protect America's parks and wilderness preserves for future generations.

Developing and implementing a credible national energy strategy is one of the highest priorities of the environmental community. So we are heartened by the evident consensus among policy-makers both within the Congress and the Administration, and among other opinion leaders, that the United States needs a national energy strategy.

But there is a world of difference between an energy strategy that will meet the nation's security and environmental needs over the long-term and one that is built from the wish lists of those industries and companies that enjoy the most political power now. We will fight for the first. We will fight against the second.

Perhaps, before we leap into a discussion of the various legislative alternatives, we should ask some simple questions: Why do we need a national energy strategy? What purpose is it designed to serve? What is missing in our current approach to energy policy making, and what breakdowns are occurring as a result? And what kind of energy strategy can we design that will deal with these breakdowns, and meet the goals that we have defined?

We believe the fundamental goal of a credible national energy strategy must be to lay the foundation, over the next decade, for a 21st Century American energy economy that is clean, efficient, renewable, and home-grown. Right now our energy economy is polluting, wasteful, non-renewable, and overly dependent on oil, much of it imported.

In order to achieve this fundamental goal, the strategy must include the following commitments and objectives:

1. Clear goals for making our energy economy more lean and mean, by increasing our energy efficiency at an annual rate of

at least 3%, and for doubling the amount of energy that we derive from renewable sources, so that we are running on 20% renewable energy by the turn of the century;

2. A national commitment to increase the fuel economy of our light vehicle fleet by 60% by the turn of the century, and to double the average fuel efficiency of our entire light-vehicle fleet by 2010. This single step would do more to reduce our oil vulnerability than would the sacrifice of all of our parks, wildernesses, and wildlife refuges for the oil resources that some think they contain;

3. Commitments to significantly improve the energy efficiency of American buildings, to greatly increase the use of efficient modes of transit, and to stabilize national electricity demand within five years;

4. A plan to at least double Federal investment in research and development of energy efficiency and renewable resources; and; finally,

5. A commitment to avoid, as unnecessary, the exploitation of America's parks, wilderness, and other environmentally sensitive lands for energy consumption.

In the past, discussions of our national energy situation inevitably cast our energy future in terms related primarily to the security of our oil supply, and secondarily to the health of various U.S. energy industries, not least the petroleum industry. Energy security in the short term was thought of in terms of the need to avoid price shocks and supply interruptions. Energy security as a long-term concern was thought of, if at all, in terms of milking the last drop of fossil fuels, and finding innovative ways to convert potential fossil fuels, such as oil shale, to a useable form.

This paradigm no longer fits the real challenges that are facing the United States and the world at the end of the Twentieth Century. The environmental consequences of our energy policy choices, and the economic consequences of our continuing energy wastefulness, have become controlling factors.

We are, in effect, swimming in a universe of new facts, both political and ecological, that cast great doubt on the continued meaningfulness of the traditional concept of "energy security."

The fact that excess emissions of carbon dioxide to the atmosphere have now reached the point where they represent a threat to the stability of world climate systems requires us to rethink our old model of what our energy problem is, and to reject many of our traditional energy policy assumptions. Much uncertainty remains, but it seems clear the world cannot afford to burn all its fossil fuels, or even a very large portion of the remaining inventory, without courting potentially disastrous changes in world climate processes and in the delicate atmospheric conditions that have so far allowed human society to flourish on the planet.

The tenacity of more well-known environmental problems, such as acid rain from regional deposition of oxides of sulfur and nitrogen, and ozone pollution in metropolitan areas from automobile and truck traffic, is the direct hangover from past energy policy choices. We can't eliminate the public health and environmental damage from these pollutants by hanging on to outmoded energy policy options.

The particularly tragic consequences for wildlife and wildlife habitat of our continued dependence on oil as a primary energy resource are more clear than ever before. Prince William Sound and the Persian Gulf stand as mute testimony to our inability to avoid or control the recurrent wildlife devastation that results from our present energy policy.

A review of the decline of the U.S. economy in world markets clearly shows, as one factor, the relative energy inefficiency of key sectors of the U.S. economy, including transportation and manufacturing. The economies that are now prospering in the world marketplace, such as those of Japan and West Germany, are not only more energy efficient overall than the U.S. economy, but have exhibited a willingness to invest in the development of energy efficiency and renewables industries, in the expectation of a growing world demand for such techniques and services.

These trends suggest that a new definition of energy security must recognize the link between our energy system and the quality of our environment, as well as the link between energy efficiency and economic efficiency.

We should also recognize that, in terms of our more traditional oil security concerns, some effective steps have been taken. This Committee has taken a leadership role in improving the resilience of the U.S. economy to any short-term supply interruption, through its insistence on maintaining a high fill-rate for the Strategic Petroleum Reserve. The utility of the reserve as a buffer against price run-ups in the spot market was demonstrated during the course of the Gulf crisis. The fact that the elimination of Iraqi and Kuwaiti production from the world market did not result in gas shortages is confirmation of the Energy Department's conclusion, in its 1987 Energy Security report, that "The United States is better prepared than ever before to deter, as well as to respond to, any energy supply emergency arising from foreign disruptions."

The relative stability of oil prices now projected by most analysts is evidence of another partial success, that of the energy efficiency steps taken by the United States and other industial nations after the oil supply disruptions of the 1970s. Again, members of this Committee can take some of the credit for our success.

It has been estimated that between 1973 and 1983, the U.S. economy achieved energy productivity gains that currently save us over 13 million barrels of oil per day -- half the entire productive capacity of OPEC. Similarly, between 1975 and 1985, the U.S. auto industry, encouraged by Congressionally mandated Corporate Average Fuel Economy CAFE) standards, improved the average fuel efficiency of its new car fleet from about 14 mpg. to about 27 mpg., with a resulting increase in the average fuel economy of all American cars and light trucks of about 66%. This step, by itself, now saves us more than 2.4 million barrels of oil per day[1].

In effect, we won a decade-long struggle with OPEC. Then we gave up. By early 1988, the abdication of energy policy leadership under President Reagan and the energy price crash combined to effectively halt U.S. progress in energy efficiency. For the first time in 12 years, U.S. energy intensity began a steady monthly increase that has not been effectively reversed even now.

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[1] Cf. Rosenfeld, "Energy-efficient Buildings," Scientific American, April, 1988.

During the same period, new evidence of the accumulating environmental damage caused by continued reliance on fossil fuels revealed how far we still have to go. Oil security, in the old sense, can no longer be the single focus of our energy concern.

In this context, drilling the Arctic Coastal Plain is the wrong answer to an outmoded question. As the "cornerstone" of a solution to America's energy problems, it is a throwback, not a policy for the 90s. Enacting Title IX of S.341 will not fundamentally alter the United States' oil security problem. It will exacerbate, not alleviate, the environmental damage caused by our present means of energy production. And it will destroy one of the earth's last great dynamic wilderness ecosystems.

AUDUBON'S POSITION: PROTECT THE ARCTIC NATIONAL WILDLIFE REFUGE

In June, 1989, the Board of Directors of the National Audubon Society passed a resolution setting forth the Society's policy regarding the future of the Arctic National Wildlife Refuge. The resolution says, in part:

> After reviewing the evidence set forth in two years of Congressional and administrative hearings concerning the proposal to open the to open the coastal plain of the Arctic National Wildlife Refuge for oil and gas development, the National Audubon Society believes that Congress should not approve development legislation, and should instead take the necessary action to assure the permanent protection of the wilderness, wildlife, and recreation resources of this fragile and biologically rich Arctic ecosystem.

I have attached the full text of the Board resolution for the Committee's record.

The unique quality and particular fragility of the wilderness ecosystem which is the Arctic National Wildlife Refuge has been internationally recognized. Arguments for its protection have been made by the International Union for the Conservation of Nature, as well as by the Canadian Government. It has been widely noted that the 100-mile coastal plain of the refuge is the only stretch of Alaska's thousand-mile Arctic coast which is not open to development. The Committee has already heard all this, and more -- that the coastal plain is one of the few, if not the only places, on the North Slope where polar bears den onshore, that it contains the principal calving ground of the Porcupine River Caribou Herd, that it contains habitat for dozens of other rare Arctic species, from Arctic foxes to muskoxen and peregrine falcons.

Plainly, we believe the coastal plain of the Arctic National Wildlife Refuge is precisely the kind of resource that a society with a long-range view to its own future would try its utmost to protect for future generations.

Testimony presented to this and other committees over the past two Congresses has detailed the reasons why the environmental community doubts the oil industry's oft-repeated claim that the industrial development of the coastal plain can be accomplished without damage to the overall balance of the ecosystem which defines the Arctic National Wildlife Refuge. The evidence leads us to believe that the enactment of development legislation will inevitably lead to the destruction, not only of wildlife and wildlife habitat, but of the essential wilderness balance which is at the heart of this unique Arctic ecosystem.

WHY SACRIFICING THE COASTAL PLAIN OF THE ARCTIC NATIONAL WILDLIFE REFUGE WON'T SOLVE AMERICA'S OIL SECURITY PROBLEM

As Dr. Daniel Lashof pointed out in his testimony before the Committee on February 28, the relative insignificance of the United States' remaining oil reserve base offers very little hope that we can ever regain, through increased production, the kind of leverage over the world oil market that we enjoyed through the 1950s:

> The United States is responsible for 26% of global oil consumption but contains only 3% of global oil reserves. Thus increasing the amount of useful work that Americans get from each barrel of oil is the most important action we can take to reduce the power of oil-rich dictators and insulate our economy from price shocks generated in world oil markets.[2]

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[2] Lashof, Dr. Daniel A., Statement On Behalf of the Natural Resources Defense Council, et. al., Regarding the CAFE Provisions of S.341, before the Committee on Energy and Natural Resources, U.S. Senate, February 28, 1991.

In 1988, the General Accounting Office, in an analysis of world oil reserve and production trends, estimated a total of 795 billion barrels of proved or inferred reserves, and an additional 262 to 927 billion barrels of as yet undiscovered, but recoverable oil resources. Of the 795 billion barrels of identified recoverable reserves, GAO estimated that less than 70 billion barrels remain in the U.S. and Canada[3].

Not only do we no longer possess the ability to govern or even materially affect world oil prices through increased production; in fact, the situation is the other way around. Our ability to achieve or maintain any particular level of production in the United States is to a significant extent dependent on world oil prices. The drastic decline in U.S. domestic oil production in the last four and a half years is primarily the result of the shutdown of marginally profitable wells as a consequence of the plunge in world oil prices that began in 1986[4] [5].

GAO's report also noted that U.S. finding costs were higher than the world average:

> The cost to find and produce oil in the United States is considerably more than in other countries. DOE estimates that finding costs in the United States average about $8 to $10 per barrel, or over twice the Middle Eastern cost. Moreover, finding and producing U.S. oil from difficult areas, such as offshore fields or the Alaskan North Slope, can double these costs[6].

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[3] GAO, Energy Security. An Overview of Changes in the World Oil Market, August, 1988.

[4] Cf. Yeager, Brooks, Wasted Energy. A Report on the Reagan Administration's Energy Program, Sierra Club, 1988, p.7, citing Fisher and OTA studies.

[5] GAO, Op. Cit. The GAO analysts clearly peg the initial U.S. production decline in 1986 to the price crash:

> While the total U.S. crude oil production generally increased during the period 1979 to 1985, the substantial price drop in 1986 reversed this trend. For example, domestic crude oil production increased from about 8.5 MMBD in 1979 to about 8.9 MMBD by 1985. However, during 1986 production dropped by almost 800,000 barrels per day. (GAO, p.42)

[6] GAO, Op.Cit., p.42

Despite the fact that North America is a mature and somewhat marginal oil province in terms of global reserves, we have significant resources that can continue to sustain a moderate level of domestic oil production at the right price.

Oil industry analysts argue that, given stable price incentives only moderately higher than current prices, considerable new oil can be produced through infill drilling and the enhanced production of new reserves, as well as through the accumulation of small to mid-size, "non-glamorous" new resources. In 1987, William Fisher, the head of the Texas Bureau of Economic Geology, concluded, despite the slowdown in the pace of resource acquisition under the influence of the 1986 price crash, that a surprisingly large resource -- up to 48 billion barrels -- could be accessed at prices of $25 per barrel and below[7]. Although this is significantly higher than current price levels, it is considerably below the price at which oil from the coastal plain, if found, is expected to be commercial to produce.

In other words, the U.S. domestic drilling industry is not, in the short term, running out of oil to extract, or prospects to explore, but rather is the victim of an international oil market in which much of the U.S. oil reserve base is too expensive to produce. The development of the Arctic National Wildlife Refuge will not change this fact.

The proposal to drill the coastal plain is simply one example of a policy of substituting marginal domestic sources of remote, high-cost oil for plentiful foreign sources of remote, inexpensive oil. The Administration is apparently unwilling to take any of the several steps that analysts say would effectively buttress the U.S. producing industry, and particularly U.S. independents -- for instance assessing a fee on oil, with appropriate tax incentives for enhanced or secondary production, or establishing an oil price floor. It is also unwilling to require significant oil savings, either through regulation or through a significant gasoline or carbon tax.

Instead, the government has pursued an ineffective and ultimately damaging policy of transferring publicly owned oil resources to the industry irrespective of the environmental cost. Since the remaining unleased Federal resources are for the most part located in high-cost, remote oil provinces, this transfer also fails to benefit the independent sector of the producing industry. In effect, giving away the public's oil has become a convenient, if symbolic, substitute for policies that would actually defend U.S. producers and consumers in the world market.

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[7] Fisher, William L., "Can the U.S. Oil and Gas Resource Base Support Sustained Production?", Science, June 26, 1987, pp.1631-1636.

Leasing the Arctic Coastal Plain cannot be justified as a necessary part of an overall strategy to improve U.S. energy security. Indeed, developing the Arctic seems to have become a substitute for such a strategy.

THE ARCTIC NATIONAL WILDLIFE REFUGE IN RELATION TO OTHER ELEMENTS OF S.341

Since the Bush Administration's National Energy Strategy contains no significant commitment to improved fuel economy, its fundamental oil security proposal is to develop the coastal plain of the Arctic National Wildlife Refuge to put gasoline in the tanks of an automobile and light truck fleet that will not be much more efficient in the year 2000 than it is today. One hundred per cent of the revenue from coastal plain leasing would be deposited in the Treasury.

S.341 also proposes to develop the coastal plain, but it adds a few wrinkles to the Administration's strategy. First, Title XI of the bill proposes a new Corporate Average Fuel Economy (CAFE) program, with the standard to be set by the Secretary of Transportation, as he deems feasible. Second, Section 9602 would utilize the 50% Federal share of bonuses, rents and royalties from coastal plain leasing to set up an Energy Security Fund to underwrite a variety of other energy projects, at the discretion of the Energy Department. The list of projects and programs eligible for funding embraces a wide variety of technologies, from energy efficiency to conventional fossil fuel production, and specifically includes the Federal share of the advanced nuclear reactor demonstration proposed in Title XII of the bill.

Unfortunately, these changes do not make the bill, or the leasing of the coastal plain, any more acceptable. We do not regard it as reasonable to exploit our nation's greatest intact wilderness ecosystem as a cash cow to fund a hodge podge of energy programs the identity and priority of which is left up to the DOE bureaucracy to decide. And given the sorry record of past Federal efforts to underwrite the future of the nuclear industry through advanced reactor demonstrations, we believe it would be scandalous to sacrifice the Arctic coastal plain in order to fund yet another Clinch River Breeder disaster.

Nor does the inclusion of an uncertain fuel economy standard prove that S.341 is balanced. Under the provisions of Title XI, the new standard will be placed in the discretion of the same Secretary of Transportation who has called Senator Bryan's fuel economy legislation "the Highway Death Act of 1991." The views of this Administration regarding the economic practicability and technical feasibility of advances in automobile fuel economy are already well known. They remind one of the Far Side cartoon in which a stegosaurus, at the lectern, is addressing a disconsolate audience of other dinosaurs: "The picture's pretty bleak... the world's climate is changing, the mammals are taking over, and we all have a brain about the size of a walnut."

In their most significant elements, S.341 and the Bush Administration's National Energy Strategy are remarkably similar. The "balance" to be found in each is primarily a balance between the oil industry and the nuclear industry. This kind of "balance" is not what is needed for a U.S. energy strategy that can help us meet the challenges of the 21st century.

A policy based on the security of the oil industry is not the same as a policy to make the American economy less dependent on oil. A policy that continues to countenance energy waste will not improve our competitiveness as a nation. A policy based on a nuclear revival will threaten our safety. And a policy that continues our overreliance on fossil fuels imperils the future of the planet.

Instead of this kind of balance, we need direction, and a clear vision of an energy future that will be significantly cleaner, safer, more efficient, and more secure than our energy present.

NATIONAL AUDUBON SOCIETY ARCTIC NATIONAL WILDLIFE REFUGE RESOLUTION, June 11, 1989

After reviewing the evidence set forth in two years of Congressional and administrative hearings concerning the proposal to open the coastal plain of the Arctic National Wildlife Refuge for oil and gas development, the National Audubon Society believes that Congress should not approve development legislation, and should instead take the necessary action to assure the permanent protection of the wilderness, wildlife, and recreation resources of this fragile and biologically rich Arctic ecosystem.

In particular, the Society notes the weight of accumulated evidence which demonstrates: 1) that existing oil and gas drilling operations on the North Slope, as well as the operation of the overall Alaska oil transportation system, have resulted in significant damage to wildlife and wildlife habitat, as well as wilderness and recreation values, 2) that there are proven cost-effective conservation and energy strategies that will improve U.S. energy security without sacrificing this unique Arctic wilderness, and 3) that increasing dangers of air pollution and global warming have established the necessity to reduce fossil fuel consumption.

The Society also notes the tragic oil spill in Prince William Sound, which occurred despite declarations by industry and government representatives that an accident of such a scale could not happen, and would be easily cleaned up if it did; and the failure to respond to the spill in a timely and effective manner, which occurred despite elaborate mitigation plans agreed upon by the same industry and government representatives.

The National Audubon Society calls for permanent protection for the Arctic National Wildlife Refuge coastal plain in its present wilderness state, through its inclusion in the national wilderness system.

As approved By The Board 6/11/89
Thompsonville, Michigan
By.

ACE3 American Council for an
Energy-Efficient Economy

1001 CONNECTICUT AVE., N.W. SUITE 535 WASHINGTON, DC 20036 (202) 429-8873

Dec. 7, 1990

President George Bush
The White House
1600 Pennsylvania Ave., N.W.
Washington, DC 20500

Dear Mr. President,

The undersigned organizations are writing concerning the National Energy Strategy now being prepared by your Administration. We believe that the objectives of the Strategy should be to minimize the cost of energy services to the nation, reduce environmental damage, slow global warming, enhance energy security, and increase the competitiveness of America's industries. More specifically, we believe the NES should:

o ensure that energy services are provided at least cost to society, taking into consideration direct economic costs as well as environmental and public health costs, tax subsidies, national security expenditures, and other indirect costs over the full lifecycle of each energy source or technology;

o reduce the environmental and public health damage caused by the production and use of energy, including an absolute reduction in carbon dioxide emissions of at least 2% per year on average; and

o reduce our dependence on oil by at least 20% in 2000, using least-cost strategies that do not compromise environmental protection or infringe upon sensitive ecosystems like Alaska's Arctic National Wildlife Refuge.

The Strategy should apply the same tests to all policy options (both supply-side and demand-side) for providing our nation's energy services. The Administration should publish a consistent analysis of all options, showing how its preferred options are more favorable than rejected options. And the public should be given a chance to comment on a draft of the Strategy.

Numerous studies and considerable testimony presented to DOE show that greater energy efficiency and renewable energy sources comprise our largest, cleanest, lowest -cost, near-term energy resource. Unfortunately, the federal government has failed to support, and in some cases has impeded, energy efficiency improvements and renewable energy sources in recent years. To cite a few examples, energy efficiency R&D and state and local assistance programs were cut by more than 65%, renewable energy R&D was cut by 80%, automobile fuel economy standards were rolled back, and national appliance and building efficiency standards were opposed and delayed during the 1980s. The Administration must use the National Energy Strategy to make energy efficiency and renewable energy the foundation of our energy policy.

In order to achieve this, we urge you to adopt the following major energy efficiency and renewable energy goals and policy initiatives:

1) **Reduce national energy intensity (energy consumption per unit of GNP) by at least 3%/yr and increase the fraction of energy demand provided by renewable sources to at least 20% by 2000.**

   Achieving these goals would result in a significant reduction in carbon dioxide emissions from fossil fuel consumption. A commitment to ambitious but achievable energy efficiency and renewable energy goals is critical to a sound Strategy.

2) **Increase the average fuel efficiency of new light vehicles 60% within a decade and double the average fuel economy of our on-road light vehicle fleet by 2010.**

   Strong new fuel economy standards, financial incentives such as revenue-neutral fees and rebates, and other policy instruments can be adopted to reach this goal. Increasing vehicle efficiency is by far the most important and cost effective action the federal government can take to reduce our dependence on oil imports and reduce carbon dioxide emissions.

3) **Stabilize national electricity demand within five years.**

   To do this, the NES should move the federal government into a leadership role in supporting least-cost utility planning (also known as integrated resource planning). For example, FERC should only approve interstate power sales that are consistent with least-cost plans and FERC should quantify and incorporate environmental externalities in its evaluations. In addition, efficiency improvements should be allowed to compete with power supply options under PURPA and other utility resource acquisition programs, and the federal government should eliminate its unfair tax treatment of energy efficiency incentives provided by utilities.

4) **At least double the fraction of the federal energy R&D effort that is devoted to energy efficiency and renewables within three years.**

   At present, energy efficiency and renewables account for only 11% of federal energy R&D spending. This is far too little considering the critical role that efficiency and renewables have played and the widespread innovations that are still possible. Working with the private sector, the federal government can accelerate the transition to clean, renewable energy forms and ensure that the United States plays a leading role in producing the next generation of conservation and renewable energy technologies.

5) **In buildings, cut energy end-use per unit of floor area at least 25% by 2000.**

   This goal can be achieved by promoting the adoption of tougher building codes at the state and local level, adopting new minimum efficiency standards on appliances, motors, and lighting products, expanding and improving weatherization of low-income housing, supporting utility conservation efforts, and eliminating widespread energy waste in federal buildings.

These proposals have been provided to DOE at public hearings and in written comments. Excluding any of these items from the NES would, in our view, seriously weaken it and subject it to criticism from the conservation and environmental community.

Making a strong commitment to greater energy efficiency and renewable energy sources will provide wide-ranging benefits for the U.S. Consumers would save hundreds of billions of dollars, our national security would be strengthened, industries would become more competitive, all forms of pollution would diminish, and sensitive ecosystems would be protected. No other energy resources offer so much with so few negative impacts. In addition, making efficiency and renewable energy the centerpiece of the NES will set a positive example for other nations. Making this commitment is all the more important since climate change negotiations are about to begin. All other wealthy industrialized countries have committed to stabilizing or reducing carbon dioxide emissions. The NES is an excellent opportunity for the U.S. to provide leadership in safeguarding the future of our planet.

Sincerely yours,

William A. Nitze
William Nitze
President
Alliance to Save Energy

Howard Geller
Howard Geller
Associate Director
American Council for an Energy-Efficient Economy

Nancy Hirsh
Nancy Hirsh
Director
Energy Conservation Coalition

Ruth Caplan
Executive Director
Environmental Action, Inc.

Bill Roberts
Bill Roberts
Legislative Director
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Brooks Yeager
Brooks Yeager
Vice President of Governmental Affairs
National Audubon Society

Sharon Newsome
Sharon Newsome
Vice President
National Wildlife Federation

Dan Lashof
Dan Lashof
Senior Scientist
Natural Resources Defense Council

President George Bush
Page Four

Ken Bossong
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Director
Critical Mass Energy Project,
Public Citizen

Alden Meyer
Director,
Climate Change and Energy Policy
Union of Concerned Scientists

Sydney Butler
Vice President, Conservation
The Wilderness Society

Chris Flavin
Chris Flavin
Vice President for Research
Worldwatch Institute

Richard Miles
Executive Director
Renew America

Michael McCloskey
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Bill Magavern
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Staff Attorney
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Director, Energy and Climate Change
World Wildlife Fund and
The Conservation Foundation

Randy Swisher
Randall Swisher
Executive Director
American Wind Energy Association

Jaydee Hanson
Jaydee Hanson
Assistant General Secretary for the
Ministry of God's Creation
United Methodist Board of Church and
Society

The CHAIRMAN. Thank you very much, Mr. Yeager. You have not lost your articulateness. However, you did on page 12 of your statement, make a statement that sort of hurt my feelings. It says: "In its most significant elements, S. 341 and the Bush administration's National Energy Strategy are remarkably similar." Now, let me give you some of the elements that we have in S. 341 that are not in the NES.

First, title III has provisions dealing with Federal Energy Management Amendments, and requiring a plan regarding demonstration of new technology; with utilities. That title also provides for encouragement of investments in conservation and energy efficiency resources and the study of certain State ratemaking policies, as well as conservation grants to State regulatory bodies. Title III contains a whole subtitle on used oil production, and a subtitle on insular area energy assistance. Title IV has provisions on renewable energy, and contains provisions dealing with the export of renewable technologies.

We have a whole title on coal, coal technology, and clean coal. We have a WEPCo fix in the electricity area. We have—regarding the strategic petroleum reserve a whole section on filling the strategic petroleum reserve by putting a tax on imported oil, or putting a security fee on imported oil, bite my tongue. We have Outer Continental Shelf provisions, impact assistance. And I could go on further. We have CAFE standards.

Now, I understand you like the Bryan CAFE standards better than ours, but to read your statement, you would think that we are just leaving it up to DOE to do whatever it wants on CAFE. Not so. What we do on CAFE is to analyze the elements, the criteria, size, performance, safety, emissions and technology of automobiles and then mandate DOT to come up with the MPG figures that match those criteria.

Really what our approach does, in CAFE standards, is sharpen the debate so that we can say if we want cars of a certain size, then here are the savings, etc. This is not the day to debate CAFE standards, but to say that our bill is just like or remarkably similar to the President's bill, is just not so.

I mean, I do not mind if you disagree with it, but let's be honest about it. I do not mean to say you are dishonest, but let us be more candid about it, and praise those parts which are good. Because ours is a tough conservation bill. We do not have tax provisions in it because we do not have jurisdiction over that. But we have tried to include everything else that we thought made any sense. I think it is a tough, strong bill, and I think we ought to get more credit with the environmental community for that.

Mr. YEAGER. Well, Mr. Chairman, the last thing I would want to do is hurt your feelings. But what I—and I was not asked really to address other aspects of the bill in any detail, and I did not in my testimony today.

The CHAIRMAN. Well, I guess we really do not have time for a long discussion on CAFE and those things. We will do that in another context. But the point is made. I think that we do have a tremendous amount in our bill

Mr. YEAGER. Well, I think that we—there is effort now going on in the environmental community to analyze both bills in detail, both yours and the National Energy Strategy presented by the President. We will certainly furnish you with any comparisons that we come up with in detail.

The **CHAIRMAN**. Well, it is not just the comparison. If something else makes sense in areas that are nontax that we can put in here—like enhanced oil recovery, I think we would like to do so.

Now, let us see where we disagree and where we agree. First of all, let us talk about where we agree. Do we agree that drilling could be done in the winter on ice roads, and if there is nothing there that there is very little scar to the environment, would you agree with me on that, Mr. Yeager?

Mr. **YEAGER**. You want to ask me?

The **CHAIRMAN**. Yes.

Mr. **YEAGER**. I have not looked at exploration proposals or any plans for exploration. I know that in speaking—and I had not come prepared to address those issues today, but I will give it my best shot. In speaking with Dave Kline in the past, who is our regional vice president in Alaska, we have had quite a few talks about the conduct of activities and exploration on the north slope, including the development at Prudhoe Bay.

I know that his belief is that the oil industry has taken some strong steps at Prudhoe Bay to try to limit the environmental damage that is caused by——

The **CHAIRMAN**. No, I am talking about exploration now, not production.

Mr. **YEAGER**. Well, I was going to get to that. And I think our belief is that despite the steps that have been taken, significant damage has occurred at Prudhoe Bay, and in past testimony, in fact, last Congress went into that in some detail. But I think that also the fragility of that area, the fragility of the tundra has shown up in a variety of ways in which tracks of exploration vehicles that explored 15, 20 years ago are still showing up as problems and damage.

So I think the difficulty from my point of view with the question of——

The **CHAIRMAN**. Well, obviously, then, you disagree on that. I think, if you will look into that, exploration today on ice roads does not leave an imprint.

Am I correct on that Mr. Herrera?

Mr. **HERRERA**. That is correct, Mr. Chairman.

The **CHAIRMAN**. I mean, I really think reasonable minds cannot differ a great deal, and I would like to get in writing a response to the question as to whether you can explore in the winter on ice roads without leaving an impact. If you do not find anything, can you move off without impact?

Mr. **YEAGER**. I would be glad to respond in writing, but I would like to make on other point, which is that in the current—our current understanding of any leasing formula that has been contained in your legislation or the President's legislation, there is no ability to restrain development after exploration. Once the least is granted, we are really looking at the whole shebang all the way through.

The **CHAIRMAN**. I understand that. That is certainly true, but let me see where we agree and where we disagree.

Would you agree with me that we have enough experience now on caribou to say that caribou are likely not to be seriously impacted by drilling?

Mr. YEAGER. Can I ask Mr. Matz to respond to that?

The CHAIRMAN. Yes.

Mr. MATZ. The experience at Prudhoe Bay is that the herd has gone from 3,000 animals when the development began to a population now of about 13,000. According to the State fish and game biologists and the U.S. fish and wildlife biologists who have taken a look and followed the caribou herd over the years, they do find that pregnant cows are displaced from some of their normal calving areas. Now, obviously, that has not been detrimental to the population, but there may be some concern for that in the future.

The herd in the arctic refuge is much different. It is the same species, but it is about 14 times the size of the herd in the Prudhoe Bay area. It is 180,000 animals now The calving area that they have is very condensed. It is between the mountains which are at their closest to the Beaufort Sea at any point along the north slope at that point, so they have a much small area in which to calve, and a much larger population.

The CHAIRMAN. Well, they do not always calve there on the 1002 area, do they?

Mr. MATZ. For, I think, about 7 in the last 15 years they have. And the biologists have identified a core calving area. So I guess the fact of the matter is that you can debate this issue interminably and you will not really know, Mr. Chairman, until you actually——

The CHAIRMAN. Well, you do not really want to base your opposition here on caribou, do you? I mean, honestly, to look at caribou in that area out there, they seem to be about as resistant to man as pigeons are. I mean, you cannot get them off the road. The population is going up. It seems to me that there may be a lot of reasons to disagree about drilling at ANWR, but caribou should not be one of them.

Mr. MATZ. Caribou can be one of them, I think, because in the arctic refuge they are part of a naturally functioning ecosystem with predators and that type of thing. In the Prudhoe Bay area there are not any predators. There is no hunting allowed, so there has been no check on the population as far as that goes.

The CHAIRMAN. Now, can you give me the kind of game in ANWR that you think would be principally impacted?

Mr. MATZ. Polar bears use the area for denning. There have already been some problems with denning polar bears that have been routed from known den sites, and aborted their cubs. That is certainly a problem. There are problems with staging areas. Any kind of habitat loss for those areas would be problematic. The water——

The CHAIRMAN. For polar bears?

Mr. MATZ. Polar bears, right. Waterfowl.

The CHAIRMAN. Waterfowl, you believe, would be impacted by oil drilling?

Mr. MATZ. Any kind of loss of habitat for those staging areas would constitute an impact to them. Now, whether or not it would be serious enough to cause a population decline, we do not know. It would cause——

The CHAIRMAN. Would you not agree with me, though, that as far as waterfowl is concerned, we have got enough experience with waterfowl now in southern Louisiana to know the impact of drilling on waterfowl, do we not?

Mr. MATZ. Actually, I think that there are new studies by the Fish and Wildlife Service, and we would be happy to try and track these down and provide them to you, which show that waterfowl populations are being hurt by using drilling mud pits for, you know, just like any other pond. And they have been affected by that. So there are, I think, studies which are showing increased impacts to waterfowl. It is not necessarily a given that there is no impacts to them.

The CHAIRMAN. Well, if there are impacts from waterfowl, I would suggest that they are awfully small and are likely to be vanishingly small in ANWR. I would like to get those figures, because I spend a lot of time hunting around southern Louisiana. We have been drilling down there for over 50 years, and we have got tens of thousands of wells. And they have done a lot of damage in a lot of areas. I do not mean to defend what they have done, and I have tried to tax the oil companies to get money to fix up some of those canals which they cannot drill anymore but which they dug at that time.

But on the question of whether it hurts the ducks or geese, or whatever, I just think the facts are that it does not. It is hard to make the case. I would be glad to get it.

Mr. MATZ. The answer that I would give to that, Senator Johnston, is that the bayous of southern Louisiana are much different from the coastal plain of the arctic refuge. It is a much more resilient area. The area in the coastal plain is obviously a much more fragile area because the actual season in the summertime is——

The CHAIRMAN. No doubt about that, but also the methods of drilling will be much, much safer than they used to do 40 and 50 years ago when they dug all the canals. Do you know of any other kind of game that would be particularly impacted?

Mr. MATZ. More than just the game, I think what we are talking about, Senator Johnston, is here is a completely intact ecosystem——

The CHAIRMAN. Well, let us focus on the game first of all, because I want to take these values one at a time if we can.

Mr. MATZ. Here are some quotes, I guess, from, what is this from? This is the Fish and Wildlife Service report. For bears and wolves: "Large numbers of problem bears were killed during construction. Many problem bears continued to be killed after construction by maintenance crews. Several reports of fur bears shot by truckers. Illegal hunting is recognized as a serious problem by the State, but implications on large mammal population is not quantified. Instances of legal or illegal take of polar bear."

The CHAIRMAN. This was at Prudhoe Bay?

Mr. MATZ. Right. "Polar bears and other scavengers attracted to facilities. Some destroyed as nuisances. Polar bears have historically denned in the vicinity of Prudhoe Bay. No recent records." On birds: "Eliminated habitat or reduced suitability for 6 of 15 species during the breeding season. Not preferred nesting habitat for any species."

Fish: "Impacts to fish resources were some of the most significant environmental problems directly associated with the construction of the pipeline and oil fields and were, in many cases, more serious or of longer duration than implied by the qualitative predictions in the EIS."

So there is some of the impacts, I think, that Fish and Wildlife Service has discovered over the years in the Prudhoe Bay area.

The CHAIRMAN. Well, we just had the director of Fish and Wildlife Service, who said that we would not expect any significant detrimental effects from ANWR. I take it you disagree with that?

Mr. MATZ. He also did say that rather than having Congress override the compatibility determination, he would rather see it exempted from the compatibility determination.

The CHAIRMAN. Now, with respect to recreation, we are not really talking about recreation resources there, are we?

Mr. MATZ. Yes, we are, to a certain extent. There are——

The CHAIRMAN. How many visits a year, 50, 100?

Mr. MATZ. I am not sure. It is obviously not like Yellowstone or Grand Canyon or Yosemite in that regard yet, but the same arguments were used for the creation and the establishment of Yellowstone in the late 1800's. Many of the people who opposed the creation and the establishment of Yellowstone National Park said that no one would ever go there. And I think that history may show that if we can set aside the arctic refuge, more and more people will go to that area to see a naturally functioning arctic ecosystem, the only one that we have.

The CHAIRMAN. Well, you know, you have got a huge area there that is already set aside. The most beautiful part of it, I would suggest, is the Brooks Range up there. And you have a huge amount—how many acres are set aside? About 19 million, I think, are set aside.

The reason people do not go there, I would suggest to you, and I have been there four times, is that it is very expensive to get there, very hard to get there. I mean, you have to fly to Deadhorse and then you have to hire a helicopter to go in, but that is well beyond the limits of the average person.

And there is, you know, not too much to do when you get there. Now. some people do it, but to suggest that that is going to be another Yellowstone, or to really suggest that recreation is going to be a big part of this, I think, is wrong.

Now, let me ask you this. Do we agree that this is not pristine, that there is a village there, and that if pristine means unspoiled, that there is already a village and an DEW station there? We certainly agree on that, do we not?

Mr. MATZ. For the most part I think that the area is pristine. There is a village there on Kaktovik, on Barter Island. There is a DEW site located there, but it is not very visible.

The CHAIRMAN. The areas that are not scarred are pristine, in other words. And, by the same token, the areas that are not drilled on would remain pristine if we drilled.

Now, let me ask you about the uniqueness of this area.

Mr. Herrera, you have spent a lot of time up there. How much tundra is there in the arctic?

Mr. Herrera. North of Brooks Range, there is about 56 million acres, something on that order, Mr. Chairman. And we are talking about 1.5 million on the coastal plain of ANWR.

The Chairman. 56 million—that is in Alaska?

Mr. Herrera. No. That is just north of the Brooks Range. That is north slope type tundra.

The Chairman. Yes. I mean, that includes Canada and——

Mr. Herrera. No, just in Alaska, northern Alaska.

The Chairman. That is what I say, in Alaska.

Mr. Herrera. Yes.

The Chairman. Well, now there is tundra in Alaska as well, is there not?

Mr. Herrera. In Canada?

The Chairman. I mean, in Canada.

Mr. Herrera. Yes. Untold acreage is there. I do not know the figures, but it goes on for a long, long way.

The Chairman. And how about in the Soviet Union?

Mr. Herrera. Thousands of miles of it.

The Chairman. What I am getting at is that tundra is not a life form that is endangered or that there is very little of it. I mean, there are millions upon millions upon millions upon tens of millions of acres of tundra.

Mr. Herrera. Yes, that is correct.

The Chairman. Do we disagree on that?

Mr. Yeager. Senator, no, I do not think we disagree with that bald fact, but may I make a response to it?

The Chairman. Certainly.

Mr. Yeager. It seems to me that if you read now about one of our greatest and most endangered parks, you could come to a lot of the same conclusions. The Everglades are there. The sawgrass prairie is there. What was considered when they were established as a large swamp in southern Florida is there. The hummocks are there. But the heart of the everglades is dying. It is a hard thing when you ask for us to atomize an ecosystem and say which part is valuable, which part is it that we do not want damaged. Is it the polar bears, or is it the caribou, or is it the arctic kit fox, or is it the ptarmigans?

The Chairman. Those live very well at Prudhoe Bay.

Mr. Yeager. Because it is a system, and if the system is damaged, if the whole thing starts to collapse, if there is—in the Everglades what we have is maybe more drastic than what might happen in the arctic. It is the biological collapse of what was the national park of the Everglades.

The Chairman. Let me tell you first of all, I am very strong for the Everglades, and I was a leading proponent of the park that we created right to the north, Big Cypress.

Mr. Yeager. I understand, but I am trying to get at, by way of a geographical metaphor, the argument that we are having here. It is difficult for us to say there are some recreational values. There are much more in the way of wildlife values.

There is much more in the sense that we believe—and I think the people that we represent believe, including many Alaskans, although not the majority—that the place has a right to exist in and for itself. That it is delicately enough balanced that the dependence of one wildlife species on another is so little understood by us that we cannot predict that we can put a footprint in there and it will all be the same later on.

And we would certainly be happy—and I think we will try to give you any biological information that we have at our disposal. But I want to take you back to 1986 and 1987 when the Fish and Wildlife Service draft report, despite what was said here today, said there might be a 40 percent decline in the caribou herd; that predators might be eliminated from most of the area of the disturbed zone in the coastal plain.

And the question that we ask ourselves, is this a step that we absolutely have to take now in order achieve the national goals that we agree on?

The CHAIRMAN. Well, I understand that, but, I mean, I find the arguments really to be excessive. I mean, to speak in terms of collapse. Collapse, when we have got Prudhoe Bay there with 20 years of experience, and it is not collapsed——

Mr. YEAGER. Well, I want to be careful. I mean, I talked about collapse in the context of the Everglades to say what—to try to describe what we may not know about what happens when an ecosystem is manipulated, is changed, is altered. We did not know when the Army Corps of Engineers started building the canals or channelizing the Kissimmee River, that that was going to cause a collapse of that system. We thought it was going to provide water for Miami. I seemed like a good idea.

The CHAIRMAN. But we know a lot more than we knew back then.

Mr. YEAGER. Do we? Do we know that much more?

The CHAIRMAN. And the Everglades, I mean, that is the jewel in the crown. I mean, that is unique. There is not that much of Everglades type around. But we have got tens of millions of acres of tundra with experience right next door, right next door. I mean, caribou are abounding there.

Let me ask just one or two questions, and I have gone way too long. I apologize.

The CHAIRMAN. Mr. Herrera, as far as the possible amount of oil there, what we know is that there is sedimentary rock that covers a wide area and that it is the same kind of rock that they have over in Prudhoe Bay. What would be the maximum amount that you can imagine? I have heard some people say that it could be as much as Saudi Arabia. Is there enough rock there to hold that much oil if it was filled?

Mr. HERRERA. Oh, yes. There is plenty of space there, Mr. Chairman. If you want to do volumetric calculations, even given the structures that have been identified on a seismic, and postulate that instead of 100 feet of reservoir rock you might have 1,000 feet, which is by no means unusual, and fill all that 1,000 feet up with oil, when you add up all those volumes you get into mind-boggling numbers.

The CHAIRMAN. But there may also be—well, we know there is some oil there, because it seeps out and all that. But what we do not know is whether there is any there in commercial quantities.

Mr. HERRERA. That is correct.

The CHAIRMAN. It could be somewhere between zero all the way to——

Mr. HERRERA. It could be from zero up to whatever your imagination cares to think of, quite frankly. I think it is unrealistic, given sort of worldwide experience, to contemplate a Saudi Arabia with its 200 billion barrels plus of reserves on the coastal plain. I mean, I would not suggest that at all.

The CHAIRMAN. I am not suggesting that. I am just saying that is in the realm of possibility.

Mr. HERRERA. Yes. It is not impossible at this stage, but it is all the way from zero up to that; that is correct.

The CHAIRMAN. Just tell me quickly about the ice roads. I took that as an article of faith that you can drill there in the wintertime on ice roads and not make a scar on the environment.

Mr. HERRERA. That is correct.

The CHAIRMAN. For exploration.

Mr. HERRERA. Yes. Your bill would require that, and I think that is totally accepted now as a means of protecting the environment. One can build ice roads which simply melt in the springtime and leave no impression whatsoever behind. Also, ice pads.

The only practical difficulty with an ice pad, of course, is connected with the depth of the well that you are drilling and can you drill it in the winter period available before your pad starts melting. You have got to make that determination in advance. It is used routinely. I mean, there are wells being drilled on the north slope, as we speak, from ice pads, so there is nothing magical about the technology. And it is perfectly—it works perfectly as far as leaving no foot print behind.

The CHAIRMAN. Gentlemen, before I turn it over to Senator Murkowski, let me just thank all of you for being here. I do not mean to make light of the values in the Arctic National Wildlife Refuge. I have been there, and I think they are very valuable. What we have got to do, I think, is balance these values in the realization that we have got to have petroleum as a bridge, at least, for awhile.

Nobody has really mentioned the balance of payments. One figure that economists use is that there are 30,000 jobs for every billion dollars of trade imbalance. Last year, we imported $55 billion worth of foreign oil. Now, if there is oil in ANWR, that is a tremendous amount of difference in the amount of imbalance in our trade. And I think a lot of jobs and a tremendous amount of economic impact, not just directly on the Federal budget in terms of taxes, but on the trade deficit which, in turn, affects jobs.

So I think we have to do a balancing act. And we have to be skeptical. I mean, I am skeptical of that new report. I have not seen it. It looks like somebody said, well, you know, we can help this thing by raising the figures. I do not know. I never took the figures very seriously anyway, because we do not know how much oil is there.

All we do know is that it is sedimentary rock that could hold a tremendous amount of oil, and there is a great amount of interest in it. And if there is oil there, it would certainly help as a bridge to the time when maybe our CAFE standards and our nuclear power could make a real difference. By the way, why the environmental community does not want to pursue our new nuclear technology that could be inherently safe, incapable of melting down, I do not know. But that is also an argument for another day.

You have been excellent witnesses. Let me turn you over to Senator Murkowski at this point.

Thank you very much.

Senator MURKOWSKI. Thank you, Mr. Chairman. Perseverance may pay off.

I think it important to recognize that when the Department of the Interior looked at ANWR many, many years ago when Senator Jackson was chairman of this committee, there was an analysis done, and clearly it did not meet a criteria prevailing at that time to establish it as a national park. And I think that is an important distinction, because it was evaluated and instead it was made a refuge. And there is a substantial difference.

And I think that as we look at the comparisons—and our environmental friends suggest that it is like damming the Grand Canyon or drilling in Yellowstone—that those are not realistic comparisons. ANWR is not like a national park of the nature of Yellowstone or the Grand Canyon. 3 million people visit the Grand Canyon; 150 people visited ANWR in the last year. If you dam the Grand Canyon for electricity, it would destroy it.

ANWR is not going to be permanently damaged by oil development, if the oil is there. If there is no oil there, why clearly, there is not going to be any impact, any footprint of any kind. So if you compare the two, it is clear that ANWR will always be available for visitors to experience a glorious wilderness experience. So I guess as an Alaskan I get a little agitated when these sweeping generalizations are suggested.

When oil is taken out of the ground, the law is going to require that reclamation be initiated. I think it is fair to say our technology, while it is not perfect, is improving in that area. It is interesting to note that tens of thousands of Americans have visited the Alaskan arctic for only one reason. And that is because oil exploration and development have occurred in Prudhoe Bay. None of them would have benefited from this once-in-a-lifetime experience had this exploration and development not have been there.

And you know, it is kind of interesting to reflect on the few people who are able to visit there are not the normal Americans that are looking for a wilderness experience. It is the fortunate American that has the opportunity to expend several thousands of dollars to get up there. So I think that should be kept in perspective. I think the governor said 80 or 85 percent of Alaskans supported the opening of ANWR.

It is kind of interesting to reflect on the attitude of the other 15 percent. I am sure 99 percent of them accept the state dividend, which is a reward for—not a perfect methodology by any means, but is some type of recognition on how to share in a nonrenewable resource as opposed to just putting it back into Government and having Government to try and expand its services as opposed to trying to make a contribution to every man, woman, and child in the State of Alaska who shares in this dividend.

So while those who oppose the opening of ANWR or, for that matter, suggest that what we are receiving as Alaskans is not in our interest, why, a very few of them turn that dividend back. I wonder how many of that 15 percent are educating their children on behalf of a State scholarship, probably the best scholarship program in the United States. It is funded by the State of Alaska. And the significance of a portion of that having a forgiveness provision which used to be substantially more than it is now.

Or the recipient of a mortgage that is under market rate, all of which are made possible by the opportunities afforded for the citizens of Alaska to participate meaningfully in a quality of life that without, clearly we would not have the availability of a dividend subsidized mortgage for homeowners, nor the extent of the educational opportunities.

You know, we also talk a good deal about CAFE standards. And I think in Mr. Matz's statement there was a reference to CAFE standards. And if one goes back I think to about the mid-1970's when we first—and I think the statement was made by Mr. Matz—invited CAFE standards to become a reality. We saved somewhere in the area of 1.5 million barrels of oil every day. And the suggestion is made that we should do that again, and I would concur with that suggestion.

But within that same time frame, we brought on Prudhoe Bay, which contributed somewhere in the area of 1.5 million to 2 million barrels per day. And history has proven we needed both. And is that not the question before us today, as we look at the necessity of alternative energies, CAFE standards, and the realization that we have got a substantial growth in third world demand for oil, that we need both?

And we should realistically look at where we are most likely to find it, where the geologists tell us it is most likely to be there and where we have got an infrastructure already established in the case of the pipeline that is built. That it is in the national energy security interest to look for it there.

I guess my question, gentlemen, to both of you representing the environmental community is, under what conditions, if any, would you support development in ANWR?

Mr. MATZ. No conditions. It is the kind of place that we feel is important enough that it should be set aside, and we feel there are other areas available on the North Slope that can be developed that will provide the bridge that Mr. Johnston is talking about, that will help move us to an economy that is not dependent on oil, that it does use alternative energies or renewables or something like that.

Senator MURKOWSKI. Mr. Yeager.

Mr. YEAGER. Just to go back to the earlier statement, I think that I might have actually made the statement about CAFE. And the figures that we have used have come from Art Rosenfeld, who is an energy efficiency expert at Lawrence Berkeley labs, are that we actually gained, we went from about 14 miles per gallon to about 27 miles per gallon in the new model fleet between 1976 and 1985, and that that saves, in his calculation, more like 2.4 million barrels.

Senator MURKOWSKI. Yes, I was referring to the first ones that went on back in the mid-1970's.

Mr. YEAGER. No, that was, that was the one that started——

Senator MURKOWSKI. I thought you said 1976.

Mr. YEAGER. But it extended through 1985.

Senator MURKOWSKI. Yes.

Mr. YEAGER. So, I think that, our feeling is that we have in fact a plenitude of other choices, that our, I would resist the presumption that our backs are against the wall. I do not think they are. I think that we have a substantial reserve base in the lower 48 in which, and actually in areas that are already available in Alaska from which we can obtain more oil with the right price.

I think the difficulty that we face is that the administration has not been able to settle on any mechanism to ensure a stable price over time——

Senator MURKOWSKI. Without belaboring it, because I do not want to keep the staff here——

Mr. YEAGER. Okay.

Senator MURKOWSKI. I think the question that I posed in my general statement was that there was a substantial savings from CAFE standards. It was a good thing, you would agree——

Mr. YEAGER. Yes.

Senator MURKOWSKI. But the point I also made is that we brought on Prudhoe Bay at the same time and we have had to use that as well. And we are still obviously importing somewhere about half of the total oil we consume. But I, my question specifically is, and I assume that you would agree with Mr. Matz, that under no conditions would you support any development of any more oil fields regardless——

Mr. YEAGER. I think I would say that there are no conditions that we foresee under which that would be an appropriate thing to do.

Senator MURKOWSKI. Thank you. With regard to the other suggestion that we look elsewhere in Alaska, I am sure you are aware that we have initiated substantial exploration in the National Petroleum Reserve, the red area over on the left of the map. And there have been separate drilling programs in NPR. The results have not been very encouraging on a lease-sale offering in 1982. It is my understanding there were no acceptable bids.

And when we look at original exploration going back into the 1930's, in the mid-1970's we had a contract with the Department of Navy, Huskie, I think was the contractor. They authorized 28 wells. In 1981 the lease-sale program was on a limited basis; 1982 and 1983 we had lease-sales, had no acceptable bids.

It does not appear that there is an awful lot of interest in this area, so should we not be realistic and recognize that oil is where you find it? You usually do not find it when you are looking for it, but the most logical place clearly is in this relatively small area of the 19 million acres.

So, as we look at what the Canadians have done, it is kind of interesting. You go back to the concern over the porcupine herd, and the Canadians have built a highway right across the calving transition route, the Dempster Highway, the caribou continue to cross that highway. There is apparently no significant damage because of the adaptability, I guess, is the only conclusion one could come to.

But the Canadians drilled 80 wells smack in the middle of the calving grounds in the Northern Yukon area which, after they could not find any oil, they made a national park. Now, is that basically factual information, Mr. Matz?

Mr. MATZ. As I understand it, Senator, the Canadians have drilled exploratory wells in Northern Yukon, three of which have been on the coastal plain of the Northern Yukon National Park before it was a national park. The rest of them were drilled in the Old Crowe Flats area, which is not the calving ground of the porcupine caribou herd.

Senator MURKOWSKI. But is that not an area where the Porcupine herd traverses through, because the people of Old Crowe go out there and take the caribou in their migration?

Mr. MATZ. There are migration routes that go through the Old Crowe Flats. It is not necessarily a wintering area; that is down in the Olglivy Mountains further south.

Senator MURKOWSKI. But the caribou transfer through there in their migration?

Mr. MATZ. That is right.

Senator MURKOWSKI. And is it a fact that the caribou cross the Dempster Highway, in other words, the migration goes right across the highway?

Mr. MATZ. That is true. I think that the problem with roads on the coastal plain areas is that it may act as an impediment to get to insect relief areas. And that is the concern with roads in the coastal plain.

Senator MURKOWSKI. Why would they not cross the road to get free of the insects out on the coastal area where there are fewer insects if they cross the roads at Prudhoe Bay where we have seen them, and they cross at Dempster Highway in their migration?

And the two greatest concerns the caribou have are the insects and the predator. And the reason that they are doing so well in Prudhoe Bay is there is nobody there shooting, because there are no guns allowed in Prudhoe Bay. And the major predator is the wolf. And they move out on the coastal plain to get away from the flies, and there is no habitat for the wolf out there, it is near the mountains where the wolves have got cover.

So is there not an indication that, indeed, these caribou are relatively adaptable and that, you know, we talk about the porcupine herd being different. If you will pardon the cliche, my Eskimo friends say they taste the same. And we certainly got an abundance of caribou in Alaska, and in Canada as well.

And I have had, you know, some of the folks from Old Crowe in and some of the people from Canada. And, you know, the suggestion that somehow their lifestyle, the subsistence lifestyle of the caribou, or the native people is going to be threatened by some activity associated with exploration ANWR, I find very offensive.

Because I think it is a scare tactic on the people who are not entitled to that kind of generalization from people who know better, and scientists who indeed have a responsibility to allay their reputation behind their recommendations, as opposed to some that just generalize on the issue of the adaptability of the caribou.

I would like to ask Mr. Herrera a question on the footprint. You know, we talk about Dulles International Airport in Washington because most people have been there, and they can reflect on what it physically looks like, which is, what, 12,000 or 13,000 acres. And you have got a field up there called Endicott, which is the tenth largest field in the U.S., at 100,000 barrels a day. And it is a relatively small footprint.

Recognizing there is going to be an impact, and recognizing that on the chart, if you put a comparative analysis together, it is relatively insignificant an area, but that does not mean it is insignificant by any means.

What is likely to be the technological advance if we are allowed to initiate drilling in ANWR, having gone from a Prudhoe Bay technology, which I assume is two decades old, to an Endicott, which is a decade old, and then to what might occur in ANWR if you can get it open?

Mr. HERRERA. I think it is going to be a startling change, Senator. And although we all sort of quietly accept the 12,000-acre figure that appeared in the legislative environmental impact statement several years ago, I think in real terms it is way too high.

Let me illustrate why I say that. Prudhoe Bay itself, if you measure accurately the amount of environment which is utilized by that field, it is less than 6,000 acres to produce the 1.5 million barrels of oil a day. Now, that is 20-year-old technology.

And we know now, as I mentioned in my testimony, that we can reduce the size of pads four-fold, virtually. We can reduce the size of the larger structures there, as we have done at Endicott, quite significantly. Every pad at Prudhoe Bay, for example, has two roads going through it for what were perceived to be safety reasons. Clearly, our experience tells us that is no longer necessary. So you can eliminate a road. And in fact, we went through the exercise with sort of total hindsight of redeveloping Prudhoe Bay a year or two ago. Instead of 6,000 acres of tundra that was being impacted, you could about half that figure.

The reality, I think, is, if we are going to find a Prudhoe Bay on the coastal plain, which we all recognize is a long shot, that the impact on that area as far as covering up habitat is going to be probably less than a quarter of the 12,000 acres, which is freely talked about. In fact, I think it is going to be significantly less than that, even, because there will be such an effort made to reduce footprint.

Senator MURKOWSKI. Would you propose to initiate exploration activities, which is the disruptive stage, I gather, to coincide with ensuring that there be limited or no activity during the migration of the porcupine caribou if they did come into that? Or, let us say, just emphatically, to try and eliminate active exploration during that calving season.

Mr. HERRERA. I would expect the Secretary of Interior to do that.

Senator MURKOWSKI. In other words, that would be a condition——

Mr. HERRERA. Yes.

Senator MURKOWSKI [continuing]. Probably, of——

Mr. HERRERA. Yes. I would not describe the exploration phase as bering a disruptive phase, anything but. In fact, it is the most benign phase because it would be carried out in the winter time when animals and wildlife is simply not around.

Senator **Murkowski**. But the theory being that, if the caribou are adaptable, and I would enter into the record Dr. Bergerud's report on the caribou at this time, who indicates in his professional opinion that they are indeed a very adaptable animal.

My point being that they would become used to the, once the field was on-line and functioning, there would be less exploration activity; the construction would be completed. And then the question of their compatibility with that environment would be probably similar to what it is in Prudhoe Bay.

[The information referred to follows:]

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The Buffalo of the North: Caribou (*Rangifer tarandus*) and Human Developments

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ABSTRACT. The demography, movement, and behaviour patterns of eight caribou populations (Kaminuriak, Nelchina, Central Arctic, Fortymile, Porcupine, British Columbia, Newfoundland, and Snøhetta) exposed to industrial activities or transportation corridors are reviewed. Behaviour patterns of caribou encountering transportation corridors are explainable in terms of adaptive responses to natural environmental features. There is no evidence that disturbance activities or habitat alteration have affected productivity. Transportation corridors have adversely affected caribou numbers by facilitating access by hunters. There are no examples where physical features of corridors or associated disturbances have affected numbers or productivity. Caribou apparently have a high degree of resilience to human disturbance, and seasonal movement patterns and extent of range occupancy appear to be a function of population size rather than of extrinsic disturbance. The carrying capacity of the habitat is based on the space caribou need to interact successfully with their natural predators. Caribou must not be prevented from crossing transportation corridors by the construction of physical barriers, by firing lines created by hunting activity along a corridor, or by intense harassment — a loss in usable space will ultimately result in reduced abundance.

Key words: caribou (*Rangifer tarandus*), disturbance, wolves, predation, overharvest, access

RÉSUMÉ. L'article examine les données ayant trait à la démographie, aux déplacements et au comportement de huit populations de caribous (Kaminuriak, Nelchina, Arctique central, Fortymile, Porcupine, Colombie-Britannique, Terre-Neuve et Snøhetta) exposées aux activités industrielles et aux corridors de transport. Le comportement des caribous ayant contact avec les corridors de transport peut être expliqué comme réaction d'adaptation aux traits naturels du milieu. Les corridors de transport ont affecté de façon défavorable le nombre de caribous en facilitant l'accès aux chasseurs. Il n'existe aucun exemple dans lequel les aspects physiques des corridors ou des problèmes associés ont touché le nombre ou la productivité. Le caribou possède apparemment un niveau élevé de résistance aux interventions humaines, et ses déplacements saisonniers et la portée de sa distribution semble varier en fonction des variations en population plutôt que des dérangements extrinsèques. La capacité de soutien de l'habitat est fondée sur l'espace dont a besoin le caribou pour réagir de façon satisfaisante face à ses prédateurs naturels. Le caribou ne doit pas être empêché de traverser les corridors de transport par la construction de barrières physiques, par les lignes de tir créées par la chasse le long du corridor ou par des harcèlements intenses; il en résultera une perte d'espace qui entraînera éventuellement une réduction des nombres.

Mots clés: caribou (*Rangifer tarandus*), dérangement, loups, prédation, surchasse, l'accès aux chasseurs

Traduit pour le journal par Maurice Guibord.

INTRODUCTION

During the past decade, considerable research has been carried out on disturbance to northern mammals. In particular, various pipeline projects and proposals became the focal point of environmental concerns, debate, and public hearings. The Trans-Alaska Oil Pipeline (TAPS) is now an operating system, and continued research (Cameron and Whitten, 1976, 1980) is providing information on the response of caribou to that development and its ancillary activities. Klein (1971, 1973) examined issues of potential concern involving caribou populations, including obstruction of movements and various types of direct disturbance to populations and their habitats. Natural gas pipeline proposals in Canada and the U.S.A. stimulated baseline research and disturbance studies sponsored by government, industry, and academic institutions. The implications of aircraft disturbance received considerable attention (Miller and Gunn, 1979), supplementing earlier quantitative evaluations of caribou responses to noise (McCourt and Horstman, 1974) and roads (Surrendi and DeBock, 1976).

With increased interest in disturbance as a facet of impact assessment, considerable debate on its significance to wildlife took place within the profession and in public fora (Jakimchuk, 1978). In the early and mid-1970s, bio-energetic impacts were postulated as a concern related to industrial developments (Geist, 1975).

A panel discussion at the First International Reindeer/Caribou Symposium in 1972 was devoted to the implications to caribou of northern development; several papers on disturbance-related topics were presented there and at the Second International Reindeer/Caribou Symposium in 1979. These symposia brought together an enormous amount of research, much which is relevant to evaluating the significance of disturbance to caribou populations. The literature available on human disturbance to northern large mammals is compiled in Shank's (1979) annotated bibliography and review containing over 551 references. Sopuck *et al.* (1979) have also completed a comprehensive review of general wildlife impacts including disturbance to large and small mammals. Klein (1980) expanded his 1971 assessment of the effects of obstructions on caribou.

In a casual examination of the existing literature, one may find evidence to support virtually any conclusion regarding the significance of disturbance to large ungulates (Shank, 1979). This uncertainty is largely a result of the emphasis being placed on individual and group observations which are then extrapolated to the population level, and of the great variation in information ranging from anecdotal notes to quantitative studies. To date, there have been no studies directed specifically at establishing the effect of specific disturbance(s) on the population dynamics of caribou. The difficulties involved in such a study are obvious. However, in a number of cases the status of populations has been analyzed in relation to disturbance forces operating within their environment (Klein, 1971, 1980; Bergerud, 1974a; Calef, 1974).

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We agree with Shank's (1979:5) comment, "In actuality, there is a potentially infinite universe of manners in which human activity can influence animal populations and merely demonstrating that one factor is not operative does not negate the influence of the remainder of possibie factors. In other words, the only way in which population responses can be shown not to be influenced by disturbance is to study population dynamics."

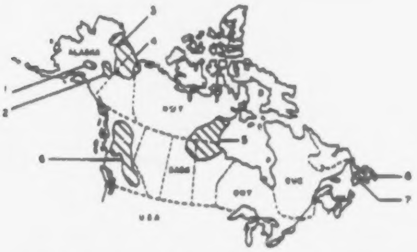

FIG. 1. The location of caribou herds described in this study. 1) Nelchina; 2) Fortymile; 3) Central Arctic; 4) Porcupine; 5) Kaminuriak; 6) British Columbia; 7) Interior; and 8) Avalon.

In this paper we will assess the impact of human disturbance on the demography of eight caribou herds (Fig. 1): the Porcupine, Nelchina, Central Arctic, Fortymile, and Kaminuriak herds; herds in British Columbia and Newfoundland; and the Snøhetta herd in Norway. We have conducted field studies of five of these herds. We have selected these particular herds because they have been mentioned as possibly being adversely affected by human impacts and some demographic statistics are available to evaluate those assertions. In our assessment of human impacts we go beyond simple correlation reasoning which links a response to a coincident event. Instead, we examine data on reproduction and mortality rates, the underlying causes of the observed rates, changes in population size, herd movements, and range use. Our objective is to show how simple correlation reasoning on the effects of human disturbance on caribou obscures alternative explanations and may lead to untestable generalizations and insupportable conclusions.

We define human disturbance very broadly to include hunting impacts, manipulation of predator populations, development disturbance (transportation corridors and physical structures), and habitat modifications such as logging and flooding.

DEMOGRAPHIC CASE HISTORIES

Porcupine Herd

In 1961 Skoog (1968) estimated 110 000 to 117 000 animals in the Porcupine herd. Lentfer (1965) estimated 140 000 in 1965, and subsequent population estimates fell within the range of 100 000-110 000. In 1972, LeResche (1975) estimated 93 000-103 000, and in the same year Roseneau and Stern (1974) estimated 90 000-107 000. In 1977 Bente and Roseneau (1978) estimated 105 000. Hinman (1981) reported an estimated 110 000 animals in 1980. Over the past 20 years the Porcupine herd has remained stable at 100 000-110 000 animals (Fig. 2).

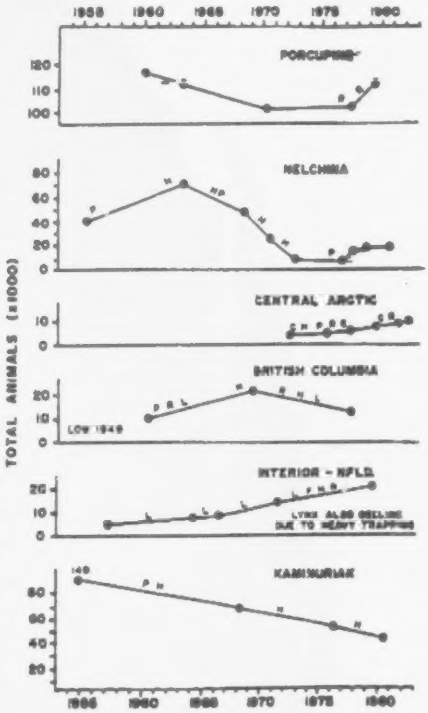

FIG. 2. Trends in population size of (a) Porcupine, (b) Nelchina, (c) Central Arctic, (d) British Columbia, (e) Interior Newfoundland, and (f) Kaminuriak caribou herds, 1949-1981, compared with presence of disturbance features (Skoog, 1968; Bos, 1973; Hawkins and Calef, 1977; Bergerud, 1978; Hinman, 1981; Fischer, 1982; E. Mercer, pers. comm. 1982; Whitten and Cameron, 1983). Key: P = predator control; H = hunting; C = construction; R = roads; F = flooding; L = logging.

Yearling recruitment has been 10-11% of the total population in July from 1971 to 1980 (Fig. 3) and calves of the year show a similar level of stability at 15-23% of the fall population (Bente and Roseneau, 1978; Hinman, 1981; Jakimchuk *et al.*, 1974; Roseneau and Stern, 1974). In the same period, hunter kill accounted for <3% of the population (Jakimchuk *et al.*, 1974; Calef, 1974, 1975; Hinman, 1981). Since at least 1971, the Porcupine herd has consistently ranged over a 240 000-km² area.

No estimates of wolf (*Canis lupus*) predation rates are available for the Porcupine herd although Jakimchuk *et al.* (1974) observed 131 caribou kills during late winter surveys in 1971. Wolf numbers are thought to be low to moderate over the range. Martell and Russell (1983) estimated 5% annual adult mortality from all sources other than hunting.

Since the late 1960s construction of the Dempster Highway has bisected portions of the winter range of the herd in northern Yukon. In 1976 new construction transected a major spring migration corridor in the northern Richardson Mountains. The highway was completed in 1978, and at that time a five-mile no-hunting corridor was established along the highway. Crossing of the highway by caribou and use of winter ranges south of the highway have continued to the present time.

Nelchina Herd

The Nelchina herd was first estimated at 10 000 animals in 1945 (Skoog, 1968). Estimates from 1948 to 1954 varied from 5000 to 13 200 animals (Skoog, 1968; Bos, 1975). Calf percentage averaged near 15% (range = 13-17%) in 1951 and 1952 (Alaska Dept. Fish and Game Files). In the period 1948-1954, 200+ wolves were removed from the Nelchina range and by 1953 only 12 wolves were estimated to be present; these increased to possibly 425 animals by 1965 (Rausch, 1967). Wolves were again reduced and McIlroy (1976) estimated 300 in 1966-67.

The first systematic caribou census was conducted in February 1955 and estimated 40 000 caribou (Fig. 2; Watson and Scott, 1956). Clearly the early counts were too low. Now a unique opportunity was available: the status of both prey (caribou) and predator (wolves) was established and the interactions of the two could be documented. Skoog (1968) began his intensive studies of the herd in the presence of increasing, known, and unmanaged wolf populations.

Following wolf removal, calf survival was high and calves soon exceeded 20% of the herd (Fig. 3). The herd increased, reaching 71 000 in the winter of 1962-63 (Fig. 2; Skoog, 1968). The increase in numbers was followed by increased movement (Skoog, 1968:649) and range expansion (Fig. 4) across the Richardson Highway.

The herd declined rapidly from 48 000 in 1967-68 to 10 000 by 1972-73 (Fig. 2; Bos, 1975), coincident with an increase in wolf numbers (Rausch, 1967), a decrease in calf survival, and heavy incidence of hunting as the herd crossed the Richardson Highway. The survival of the 1964, 1965, and 1966 cohorts

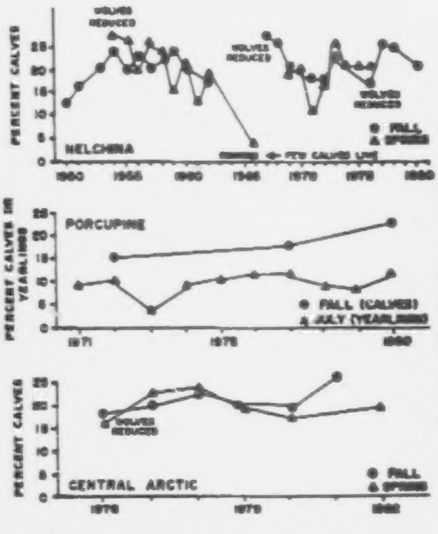

FIG. 3. Trends in calf production and recruitment for the (a) Nelchina, (b) Porcupine, and (c) Central Arctic caribou herds, 1952-1981 (Skoog, 1968; Bos, 1975; Bente and Roseneau, 1978; Doerr, 1980; Hinman, 1981; D. Russell, pers. comm. 1982; Whitten and Cameron, 1983).

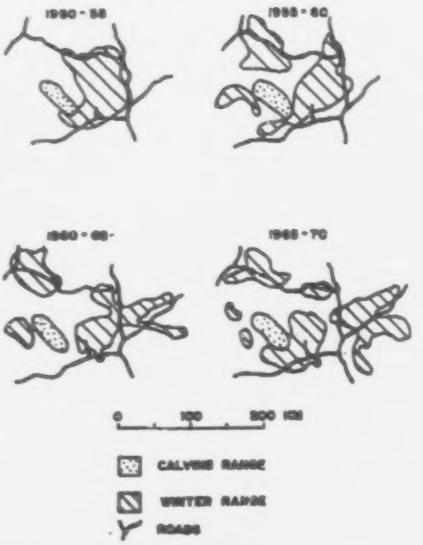

FIG. 4. Increase in extent of winter ranges used by the Nelchina herd, 1950-1970 and in 1973 (adapted from Hemming, 1971 and Bos, 1974).

was extremely low (Fig. 3; Bos, 1975). This low survival coincided with high wolf numbers, but when wolves were reduced in 1966-67 calf survival improved (Fig. 3). Coincident with a lack of recruitment, harvests of > 10% of the herd apparently occurred in many years between 1961 and 1971 (calculated from Bos, 1975). This heavy harvest was the major cause of the decline (Doerr, 1980).

The herd continued to migrate across the Richardson Highway as it declined, even in the presence of intense human disturbance from hunting. As the herd increased between 1955 and 1962, it expanded its range to include the same area it had ranged in the 1880s prior to the construction of most of the surrounding transportation corridors (Fig. 5). As the herd increased it crossed the Denali, Taylor, Glenn, and Richardson highways (Fig. 5). Roads were not a barrier to movement but did permit human access which greatly contributed to overharvest and subsequent decline.

The herd continued to decline after 1972 (Hinman, 1981), and in 1976 protective measures (a hunting closure in 1976 and permit-only hunting since 1977, and a wolf control program) were implemented by the Alaska Department of Fish and Game. By 1981 the herd had increased to a fall population of 20 730 and was considered to be increasing (Pitcher, 1982). Fall calf percentages have varied from 18% in 1976 to > 20% in subsequent years. Construction of the Trans-Alaska oil pipeline, generally parallel to the Richardson Highway, was underway during the mid-1970s. The pipeline, which bisects herd migration routes, was completed in 1977 during the period of the arrested decline of the Nelchina herd (Fig. 2). The increase in numbers and productivity of the herd which has continued to the present commenced during the actual construction period.

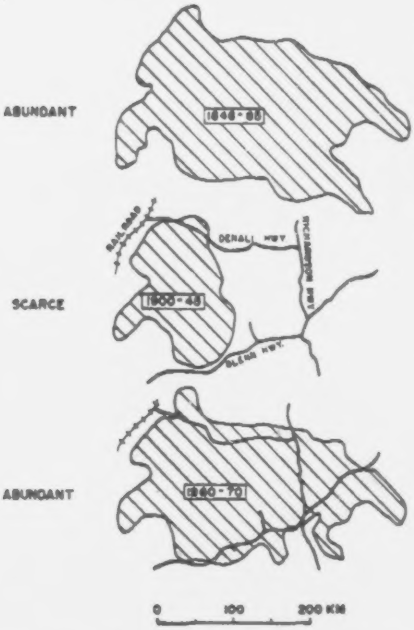

FIG. 5. Comparison of the range used by the Nelchina herd when it was abundant (1848-1885 and 1960-1970) and when it was scarce (1900-1945) (adapted from Hemming, 1975).

TABLE 1. Trends in population size for the Fortymile caribou herd

Year	Population	Source
1920s	500 000	Murie (1935)
1940s	10 000	Skoog (1956)
1950s	50 000	Davis *et al.* (1978)
1960s	Decreasing	Davis *et al.* (1978)
1968	30 000 - 40 000	Skoog (1968)
1972	15 000	LeResche (1975)
1975	4000	Davis *et al.* (1978)
1981	12 000	Hinman (1981)

Fortymile Herd

Davis *et al.* (1978) have provided a comprehensive review of the population dynamics of the Fortymile herd that is not reviewed here. The herd's numbers have fluctuated greatly in the twentieth century (Table 1). Some authors have implied that hunting along the Steese Highway may have resulted in range abandonment for the Fortymile herd in Alaska (Calef, 1974; LeResche, 1975).

As the herd has increased or decreased, its range has also expanded or contracted (Fig. 6). When the herd declined in the

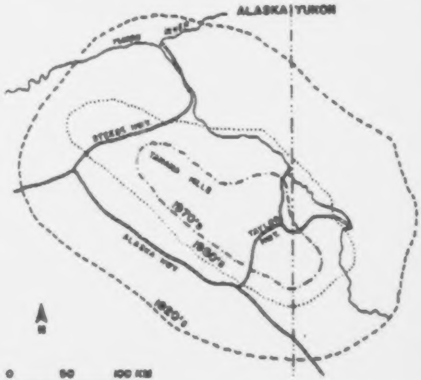

FIG. 6. Distribution of the Fortymile herd between the 1920s and 1970s (adapted from Davis *et al.*, 1978).

1960s and 1970s it stopped crossing the Steese Highway, but continued to cross the Taylor Highway (Davis *et al.*, 1978). The size of overall range of the herd has been positively correlated with abundance (Hemming, 1971; LeResche, 1975; Skoog, 1956; Davis *et al.*, 1978).

Davis *et al.* (1978:ii) concluded their review on limiting factors by stating: "From 1970 through 1972 harvests greatly exceeded the yearling recruitment rate and contributed greatly to the population decline...and...circumstantial evidence... strongly suggest[s] that predation is likely the major factor responsible for the continuous caribou decline since 1960..." We believe that the major impact of the Steese and Taylor highways has been to allow access by hunters, thereby contributing to the overharvest and decline of the herd; no barrier effect or range abandonment has been documented.

Central Arctic Herd

Skoog (1968) described caribou in Alaska's central arctic region prior to 1950 as the "Central Brooks Range herd". Thereafter the herd was thought to have merged with the Western Arctic herd. Child (1973) reviewed available information on caribou in the region and concluded that approximately 3000 caribou summered in the area around Prudhoe Bay in the early 1970s. Roseneau *et al.* (1974) believed that these caribou calved in the region, and referred to them as the Central Arctic herd. Cameron and Whitten (1976) considered these caribou a discrete subpopulation of 4000-6000 animals, characterized by synchronous and uniform north-south movements and fidelity to a calving ground on Alaska's North Slope. Recent calving grounds were subsequently described by Cameron *et al.* (1981). By 1982 the herd had increased to 9000 animals (Whitten and Cameron, 1983) (Fig. 2).

During the early period of development of the Prudhoe Bay oil field and before construction of the Trans-Alaska Pipeline System (TAPS), there were at least 30 000 caribou occupying the current range of the Central Arctic herd (Child, 1973). With the decline of the Western Arctic herd in the early 1970s, the number of caribou in the area declined to 5000 (Cameron and Whitten, 1976). We believe that the Central Arctic herd is a remnant of the Western Arctic herd that roamed the North Slope west of the Canning River in the recent and historic past (Skoog, 1968; Roby, 1978). Continued growth of both herds is likely to result in their integration, and the creation of new patterns of distribution and movement. Since 1976, increased numbers (1200-15 000) of Western Arctic caribou have been observed wintering in the range of the Central Arctic herd (Carruthers, 1983).

Studies of caribou response to the TAPS corridor in this region commenced in 1974 (Cameron and Whitten, 1976; Roby, 1978). The objectives of these studies centered on the postulated barrier and disturbance created by the TAPS and associated haul road and the implications to caribou range use and herd viability and integrity. These studies were initiated along the TAPS corridor (Sagavanirktok River valley) at a time when understanding of overall range use and movements was incomplete and affinities with adjacent herds were not recognized as important considerations.

Roby (1978), Cameron *et al.* (1979), and Cameron and Whitten (1980) have reported local "abnormalities" in caribou distribution and group composition along the TAPS corridor, which they interpret as avoidance of the corridor. They conclude that this behaviour potentially can reduce the productivity of the herd and may result in "fracturing" of the herd. These effects have not been demonstrated during eight years of research and the consequences appear to be absent based on available demographic data which indicate a healthy, expanding population (Figs. 2, 3; Hinman, 1981; Whitten and Cameron, 1983).

The natural mortality rate is unknown but is considered to be low in view of the low wolf population after 1977 (Cameron and Whitten, 1979). Prior to 1977 wolves were "common" on the range of the Central Arctic herd (Roby, 1978; Cameron and Whitten, 1979). Between 1977 and 1979 "at least three active packs" were reduced to "two to three individuals" by legal and illegal hunting (Cameron and Whitten, 1979:34). Short-yearling recruitment between 1976 and 1978 increased from 16 to 24%, and averaged 22% after 1978 (Fig. 3; Cameron and Whitten, 1983).

Mortality from hunting appears to have been low (<2%) since 1976 (Cameron and Whitten, 1979; Hinman, 1981). Prior to 1976 there were no controls on hunting of the Central Arctic herd and the pre-1976 harvest is unknown (Cameron and Whitten, 1979).

The construction of the Dalton Highway (North Slope Haul Road) began in April 1974 and was completed in September 1974. The 122-cm-diameter Trans-Alaska Pipeline System was constructed parallel to the road and the Sagavanirktok River in 1975 and 1976. A small-diameter natural gas pipeline (buried) was constructed beside the Dalton Highway in 1976 and 1977. During this period hunting was restricted within 8 km of the Dalton Highway.

The Central Arctic herd continued to migrate north and south, parallel to the TAPS and the Dalton Highway, during and after this construction period. Between 1973 and 1982 the herd had increased at an average annual rate of 13%. Productivity in June was high (85 calves/100 cows) (Banfield *et al.*, 1981). Mortality rates probably decreased after 1976 because of legal and illegal wolf hunting, and hunter harvest of caribou is believed to have declined as a result of implementation of controls. The construction and operation of two pipelines and the Dalton Highway through the center of the range of the Central Arctic herd and the proliferation of oil field facilities in the Prudhoe Bay area were not correlated with a negative demographic response by the herd between 1974 and 1982.

At this time the Western Arctic herd, adjacent to the Central Arctic herd, is increasing (Davis and Valkenburg, 1983; Davis *et al.*, 1980). We predict that, as the Western Arctic herd increases, it will expand into the range now occupied by the Central Arctic herd. If that happens it could merge with the Central Arctic herd, with the result that behaviour of the latter herd will no longer be distinct and its current range use may change. We make this prediction now because, if the Central Arctic herd should abandon or alter its range, it would surely be attributed to human disturbance rather than to the natural spacing shift of a large, mobile population.

British Columbia Herds

Caribou were common in the 1930s in B.C. but declined to low numbers in the 1940s and early 1950s (Bergerud, 1978). This decline coincided with an expansion in numbers and distribution of moose (*Alces alces*) and wolves (Hatter, 1950). Poisoning programs between 1940 and 1963 caused a decline in the wolf population. The caribou population then increased and reached at least 20 000 animals by 1968-1970 (Fig. 2; Bergerud, 1978). The population then declined again: by 1977-78, when many of the herds were censused, the population was down to 10 000 animals. A census of many of these herds in October 1982 indicated a further decline of approximately 50% (Bergerud, unpubl.).

The decline of caribou north of Prince George has been attributed to heavy predation on calves and to overharvest of adults resulting from increased hunter access along new transportation routes (Bergerud, 1978). In 1979 and 1980 young caribou calves were radio-tagged and followed for several months. Predation by wolves and bears was the major cause of mortality (R. Page, pers. comm. 1982).

Several herds were overharvested during the period of declining numbers. For example, the Pink Mountain-Prophet River herd declined from at least 3500 animals in 1969 to possibly only 300-400 animals in 1978. The increased harvest occurred because the Alaska Highway provided hunter access to caribou that came unusually far east, and because hunters travelled seismic lines via snowmobile to reach the animals. Other herds that were obviously overharvested because of increased hunter access included the Telkwa herd, the Tweedsmuir herd, and the Atlin herd (Bergerud, 1978). Helicopters were used to reach the Telkwa herd; the Tweedsmuir herd was accessible from boats travelling up a reservoir created by damming, and access to the Atlin herd was provided primarily by mining roads.

The decline of caribou in central B.C. south of Prince George (Yellowhead herd) was attributed to overhunting and to habitat destruction from logging (Bloomfield, 1980). He included as secondary adverse effects of development: (1) road and habitat barriers to movement; (2) herd displacement; (3) loss of range continuity; (4) increased access; and (5) harassment of caribou. Bloomfield (1980) provided little demographic evidence in support of his view that habitat destruction and harassment *per se* were major factors in the decline. He did not measure reproductive or adult mortality rates, nor did he record animals in poor condition or find starved animals. He found one animal illegally killed.

The Yellowhead Highway and nearby railroad (in the Fraser River valley) are not barriers to caribou movement. The caribou seek both the road and railroad corridors in periods of deep snow. There has been a number of collisions of caribou with trains (K. Child, pers. comm. 1982). The caribou also risk death on the paved highway, which they seek out to escape adjacent deep snow and possibly also to lick salt. The animals are habituated to the heavy traffic and remain on the paved surface in the presence of traffic (K. Child, pers. comm. 1982). At Kootenay Pass, B.C., animals cross the main highway and use the corridor under the adjacent power line (Johnson and Todd, 1977). Several animals have been killed by vehicles. The animals commonly remain on the side of the road unless approached by people on foot.

Bloomfield (1980:713) also believed harassment was a factor in the decline of the Yellowhead herds: "Harassment can result in diminished growth and reproduction, avoidance or abandonment of critical areas, injury or death." His reference for this generalization was his thesis (Bloomfield, 1979). But during his study he did not measure growth or birth rates, nor did he document avoidance or abandonment of range, or harassment. Such undocumented generalizations, we believe, confound our understanding of caribou behaviour and demography.

The caribou in central and southern B.C. did not decline because of habitat destruction or harassment *per se*. Calf survival is higher for caribou in disturbed central and southern B.C. than in northern B.C. where habitats have not been logged (Figs. 7, 8). In southern and central B.C. the animals commonly make use of arboreal lichens on the branches of freshly cut trees. Ritcey (1980:4), speaking of the decline in central B.C. south of the Yellowhead area, said, "Since productivity has remained high we can only assume that mortality factors not related to nutritional deficiencies are responsible for any possible reduction in numbers."

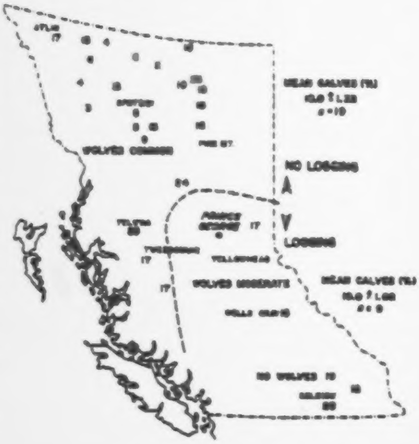

FIG. 7. The location of B.C. caribou herds and the percentage of calves in 1976 and 1977; comparison is between herds in northern British Columbia, where wolves were common and the forest was not logged, vs. those in southern British Columbia, where there were few wolves and much of the forest has been logged (Bergerud, 1978).

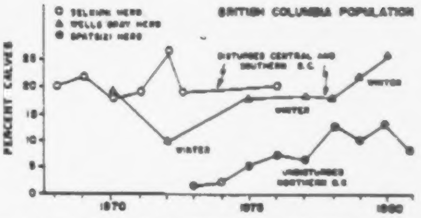

FIG. 8. Percent calves in composition counts, two herds in disturbed central and southern British Columbia vs. one in undisturbed northern British Columbia (Freddy, 1974; Bergerud, 1978).

The mortality factor that precipitated the decline of herds in southern and central B.C. was increased hunting, facilitated by increased access from an expanding network of public and private roads. The decline of the Yellowhead herds was a direct result of hunting and poaching (Fig. 9). Loss of food and cover habitat were not causative factors in the decline.

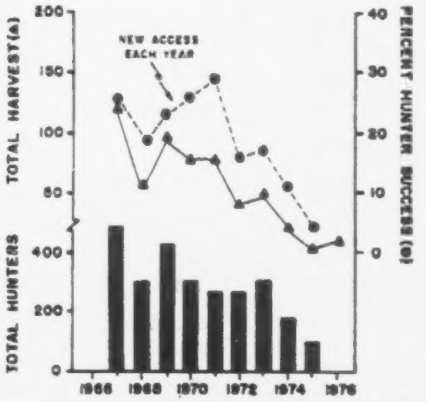

FIG. 9. Decline of the Yellowhead herds based on hunting statistics (Bergerud, 1978).

Newfoundland Herds

The Interior herd of Newfoundland has been exposed to considerable human disturbance. Large areas of former winter range have been flooded since 1970, coincident with the construction of roads and canals. Over 75% of the original forest has been logged (Bergerud, 1971), and the range has been bisected by logging roads and two public highways (Fig. 10). The herd is also the most intensively monitored in North America. Calf percentages are determined in spring, and the herd is counted at intervals. Demographic statistics now span 25 years, from 1956 to 1981, embracing the interval of extensive development.

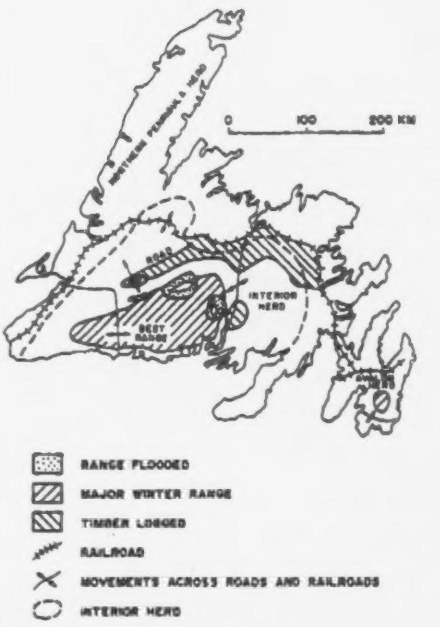

FIG. 10. Distribution and movements of Newfoundland caribou herds (Interior and Avalon) in relation to roads, logging, and flooding.

The caribou in Newfoundland may have numbered 40 000 animals around 1900 (Bergerud, 1971). The Newfoundland railroad was built across the caribou range between 1890 and 1897 (Dugmore, 1913). Caribou from the Northern Peninsula, White Bay Downs, and the White and South Hills historically migrated south to the east of Grand Lake. These herds intersected the railroad near Howley, the Gaff Topsails, and Millertown Junction (Fig. 11). More than 400 hunters (Millais, 1907) massed at these crossings each fall to slaughter the animals. The estimated 15 000 animals in these herds were eliminated by hunting in a period of about 15 years (Bergerud, 1971). Even though these animals met a firing line of hunters (Millais, 1907:102), they continued to cross the railroad until the herd was nearly destroyed.

A Newfoundland herd not discussed in Bergerud (1971), the Topsails herd, now ranges on both sides of the railroad in the area where the Northern Peninsula herd used to migrate south (Fig. 11). This herd numbered less than 300 animals in the

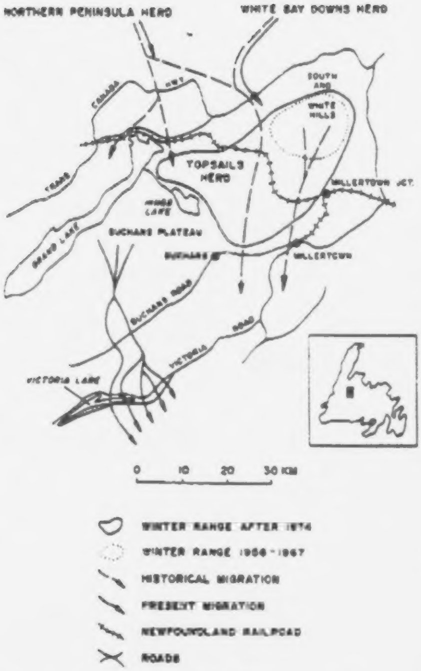

FIG. 11. Migration and distribution of caribou in central Newfoundland in relation to transportation corridors.

1950s and wintered in the White and South Hills. The herd presently consists of 2000 caribou, which freely cross the railroad that bisects their range. The area is open flat tundra and the trains can be seen and heard at great distances.

There are now over 20 000 caribou in the Interior herd (E. Mercer, pers. comm. 1982; Fig. 2), though their numbers are currently limited by illegal hunting (E. Mercer, pers. comm. 1982), which is more prevalent because of the expanded road network and the advent of the snowmachine. Nevertheless, the Interior herd has increased at r = 0.06 for the past 15 years (Fig. 2). Calf survival has been high and percent parous females has consistently been >80% (Fig. 12). The herd has remained productive, even as its size has tripled and as development has resulted in destruction of lichen ranges, the removal of much of the original timber, and the bridging of the range by public and private roads, hydro lines, and canals.

The Avalon herd of Newfoundland provides a second example of caribou crossing a road as range expansion accompanied a growing population. As the herd increased, from 125 animals in 1956 to 3000 animals in 1979 (Bergerud, 1971; E. Mercer, pers. comm. 1979), it expanded its range south until it encountered a road across the south end of the peninsula (Fig. 10). In July 1978 Bergerud observed hundreds of caribou, mostly females and calves, just north of the road within sight of the fast-moving traffic and accompanying clouds of dust. The animals had habituated to the traffic and could be approached to within 100 m. In the summer of 1980, 500 animals crossed the road and again in 1981 several hundred crossed. The animals in this herd had no tradition of crossing this road and had no experience with other roads.

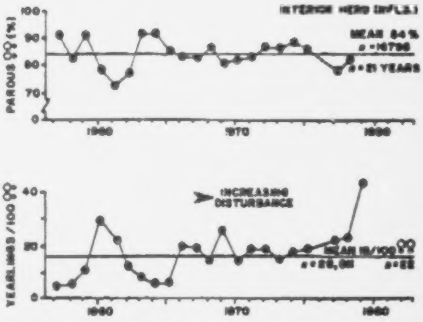

FIG. 12. Counts of yearlings/100 females and percent parous females in June in the Interior herd, Newfoundland (Bergerud, 1971; Fong and Mercer, 1975; Newfoundland Wildlife Files).

Kaminuriak Herd

Our intent is to evaluate the impact on the Kaminuriak herd of the Hudson Bay Railroad to Churchill, Manitoba. The railroad was constructed between 1925 and 1931 south of the Churchill River (Fig. 13). Banfield (1980) believed that the Kaminuriak herd increased throughout its range in the early 1940s. Subsequently the herd showed a continuous decline, from 145 000-149 000 animals in the period 1949-1955 to 63 000 animals in 1968 (Fig. 2); Banfield, 1954, 1980; Loughrey, 1955; Parker, 1972). Berger (1977) felt that the barrier effect of the railroad might have contributed to the decline in the herd's population.

The southward movement of the herd has varied through time. Parker (1972), in his review of historical records, concluded that barren-ground caribou were seldom south of the Churchill River before 1900. The distribution observed by Hanbury in 1904 (Parker, 1972) was similar to that documented by Parker in 1966-1968. In both periods the animals were north of the Churchill River.

Two southward penetrations across the Churchill River occurred in the twentieth century, one around 1900 and the other starting about 1935 (Parker, 1972). Lawrie (1948, in Parker, 1972) stated that the first heavy migration along the railroad began in 1935, and that caribou were even more plentiful in 1942. In 1945-46 extended movements brought caribou for the first time in 40 years to God's Lake, Cross Lake, and Oxford

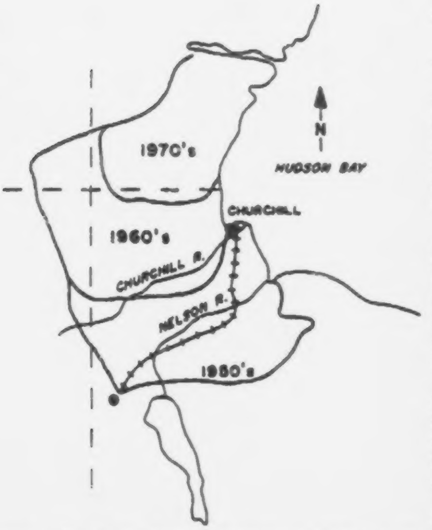

FIG. 13. Distribution of the Kaminuriak caribou herd between the 1950s and 1970s (Simmons *et al.*, 1979).

House. Banfield (1973) documented crossings of the railroad between 1947 and 1953: the migrations ceased after the winter of 1957-58.

Additionally, Parker (1972) concluded that the population increases in the late 1940s resulted in greater penetration southwards. Simmons *et al.* (1979) have provided a distribution map of the herd by decades (Fig. 13). They show that the herd was as far south as the railroad in the 1950s (Fig. 13) and had more northerly range in the 1960s and 1970s. This expansion and contraction of range according to fluctuations in numbers is comparable to that discussed for the Nelchina and Fortymile herds.

In summary, historically the Kaminuriak herd seldom came as far south as the Churchill and Nelson rivers, making only one known crossing prior to 1935. The herd first started crossing the railroad four years after its construction, and the animals continued to cross the corridor as long as the herd was abundant in the 1940s and early 1950s. As the population declined, the herd no longer came as far south as the railroad. The railroad did not act as a barrier; however, it did provide access to the herd in some years, thereby indirectly contributing to a greater kill than would have occurred in its absence. Banfield (1954), who was actually at the crossings in the 1950s, described the crossing as a normal occurrence for many years. The decline of the Kaminuriak herd has resulted from excessive harvests (Banfield, 1954, 1980) coincident with low calf survival due to wolf predation (Parker, 1972; Miller and Broughton, 1974), and possible shifting of part of the herd (Heard *et al.*, 1981; Donaldson, 1981).

Snøhetta Herd

Klein (1971) reported that construction of a railroad across the wild reindeer range between Knutsho (eastern) and Snøhetta (western) range in Dovrefjell National Park in Norway was a barrier to reindeer migrating between the ranges, and this resulted in extensive deterioration of vegetation on the Snøhetta range. This is the most widely quoted example of a transportation corridor acting as a barrier.

Two of us (RDJ and ATB) visited the Doverfjell crossing in 1979. We examined the crossing site and discussed it with E. Gaare and T. Skogland who have studied this population over 10 years. They estimated that the herd had contained about 1000 animals in 1900; it had been depleted by overhunting. The herd was subsequently protected, and increased. Most of the animals wintered on the Snøhetta range but a portion of the herd (250) wintered across the valley on the Knutsho range.

The herd subsequently declined. Skogland and Mølmen (1980:134) stated: "During the period 1920-25 it is believed that the reindeer in the area numbered a few hundred. With such small numbers large scale seasonal migrations ceased. During this period (1921) the railroad across Dovrefjell was completed...after this period...migrations ceased entirely."

During the second world war, hunting was limited and the herd increased until it numbered 15 000 by 1960 (4.4 animals $\cdot km^{-2}$) (Thomson, 1977; Reimers, 1975; Skogland and Mølmen, 1980). In 1956, during a winter with heavy snow, a few hundred animals crossed the railroad and highway and wintered on the Knutsho range. Migration across the railroad has been maintained ever since, with 1/3 of the winter population migrating (Skogland and Mølmen, 1980); these researchers report that most of the crossings take place at night when traffic is lightest. They conclude: "It appears that no type of technical installation poses immediate avoidance reaction as long as it does not physically restrict the animals' presence. The same appears true of access roads. It is the human presence on or nearby the road that induces avoidance reaction" (Skogland and Mølmen, 1980:140).

The obstacles at Dovrefjell include a high board snow-fence with an opening made for the caribou to pass through, a wire fence over which they must jump, the railroad, a major highway used by large trucks, a telephone line, and a river. We have never seen comparable obstacles in North America. Although the migration stopped coincident with railroad construction, now the animals cross not only the railroad but the two fences and the major highway. It is not apparent how the railroad alone could have halted the migration: the supposed cause, the railroad, is still present but the supposed effect of no-migration is absent. The halt in migration was probably a result of a contraction of the range because the herd's numbers were low.

DISTURBANCE THROUGH HARASSMENT

Human harassment of ungulates has been purported to cause death, reduced reproduction, and abandonment of ranges

(Geist, 1978). This hypothesis can be tested for caribou with data from the Interior herd in Newfoundland. In June 1959 and June 1964 ATB severely harassed the females on the Pot Hill calving grounds. Each day females with newly-born calves were hazed by helicopter for prolonged periods to ascertain parous condition and to see if the females would run. All those that did not run had dead calves nearby; those calves that were investigated all had been bitten by lynx (Bergerud, 1971).

TABLE 2. Percent calves (Sept-Oct) and percent parous females at Pot Hill, Newfoundland, compared with percentages for adjacent, undisturbed calving populations. Numbers in parentheses are disturbed populations. (Bergerud, 1971)

	Pot Hill		Grey River		Sandy Lake
Year	% Calves	% Parous Females	% Calves	% Parous Females	% Calves
1958-59	16.0	nd	16.7	92	13.0
1959-60	(20.1)	(77)	nd	80	17.5
1960-61	nd	66	9.9	nd	10.8
1961-62	nd	83	13.0	71	4.4
1962-63	3.3	90	5.7	89	8.5
1963-64	4.3	95	8.9	nd	13.6
1964-65	(6.3)	(96)	9.2	84	12.3
1965-66	nd	93	8.3	79	10.8

This disturbance was severe; the same animals were chased day after day. The calving area of the Pot Hill herd is only 200 km^2 but the animals did not abandon the area. Calf survival of the 1959 and 1964 cohorts was comparable to survival of cohorts born before 1959 and between 1959 and 1964, and similar to that of calves on two adjacent undisturbed calving grounds (Table 2). Also, the females of the Pot Hill herd were highly productive in 1960 and in 1965, one year after harassment (Table 2). The number of females on the Pot Hill calving ground increased in 1965, the year after the disturbance (Bergerud, 1971). Lynx predation was the major cause of death on all three adjacent calving grounds (Bergerud, 1971).

Another example of extreme disturbance of calving females occurred on Brunette Island, Newfoundland, in 1980. On 29 May seven females were chased by helicopter, and darted and drugged with M-99 (Etorphine). One female had a newborn calf; the other six females gave birth 1 June (n = 2), 2-3 June (n = 1), 7 June (n = 1), 9 June (n = 1), and date unknown (n = 1). None of the darted females abandoned their very localized range, and all were repeatedly seen near where they were drugged (H. Butler, pers. comm. 1980). The physical condition of those seven calves from hazed females was compared to that of four calves from non-hazed mothers in the fall (one calf from a non-hazed dam had died between spring and fall). Comparisons were made of calf antler length, physical size, and general activity level. H. Butler noted no difference between experimental and control groups.

At the other extreme of the gestation period, the Newfoundland Wildlife staff captured several hundred swimming female caribou from the Buchans herd in 1962 and 1963, two to five weeks post-conception. Some animals were pulled into boats and hogtied; others were driven into lakeside traps. Animals were held up to several days in tightly crowded corrals. Sixty-two of these females were seen the next spring, and most were accompanied by calves. Pregnancy rates for the herd were higher than in the previous three years (Bergerud, 1971).

In another example, this one in Manitoba in April, Miller *et al.* (1971, 1975) captured migrating gravid females in nets. They reported that 81% (n = 21) of those captured were accompanied by calves in mid-June, compared to 80% (n = 1148) of animals classified on the calving ground at the same time. Similar observations were made in Alaska by Valkenburg *et al.* (1983). They concluded that helicopter chasing, capture, and handling of gravid female caribou in the spring did not affect production or survival. They observed similar calf production between captured (84%, n = 43) and other females (78%, n = 7835) and similar survival rates in the fall (61% for captured *vs.* 64%, n = 354, for others).

We do not suggest that harassment is either unimportant or acceptable; however, there are data to suggest that caribou and other deer species (Hamlin, 1982) can withstand periodic severe disturbance without adverse effects on productivity and survival. This level of resilience has long been noted in large domestic mammals.

CARIBOU RESPONSES TO LINEAR FEATURES

Numerous authors, in discussing factors governing caribou movement and its orientation, have variously referred to caribou following paths of "least topographic resistance" or "most favourable physiographic features" (Banfield, 1954; Kelsall, 1960, 1968; Skoog, 1968; Miller *et al.*, 1972; Bergerud, 1974b; McCourt *et al.*, 1974). Our observations of migratory movements of caribou herds now suggest a broader concept. During spring migrations, the caribou of the Porcupine herd travel up the axis of the rugged Richardson Mountains; on summer movements they ascend steep slopes in the Brooks, British, and Ogilvie ranges where caribou have been observed at higher elevations than Dall's sheep. Such anomalies may be better explained by the concept that caribou move in response to paths of least *energetic* resistance, consistent with their learned directional orientation. Such a concept explains many discrepancies which are not explained by either topographic or orientation factors alone. This principle also has a direct bearing on understanding reported responses to man-made linear features, obstructions, and barriers, and the associated energetic costs of "deflections" of movements.

Parker (1972) and Kelsall (1968) showed how cows of the Kaminuriak and Beverly herds oriented to calving grounds despite the use of divergent winter ranges. Indeed, they followed a path of least topographic resistance. However, the traditional migration routes of other herds include precipitous mountain terrain and dangerous rivers. Movement traditions and behaviour may be evolutionary adaptations involving factors such as insect harassment, predation, range utilization, and the comparative energetic costs of travelling shorter, more difficult routes *vs.* longer, easier ones (Jakimchuk, 1980; Reichman and Aitchison, 1981). Movement behaviour probably has both a phylogenic and an ontogenic origin which enable caribou to respond to a variable extrinsic environment while maintaining traditions such as those described by Bergerud (1974b) and Skoög (1968).

There are numerous well-documented examples of the "least energetic resistance response". Caribou avoid swimming lakes during summer movements, and they travel single-file in deep snow but fan out where travel is unimpeded. They cross rivers and large lakes at narrow points and follow wind-blown ridgetops, despite steeper topography, when valleys are clogged with snow. This principle is observed in the similar responses of caribou to natural and man-made features encountered in their movements, and may account for much of what has been termed deflection, or paralleling man-made objects in response to disturbance.

As early as 1960 Kelsall (1960) noted that caribou would deflect from their course in order to take advantage of frozen lakes providing easier (less energetic) travel, but would abandon the route if it turned many degrees off their course (traditional orientation). The differential use of seismic lines and winter roads documented by McCourt *et al.* (1974) and Decker (1976) is identical to Kelsall's (1960) description. The associated "deflections" were oriented along the caribou's line of travel, and were not followed if they deviated from the intended travel route (McCourt *et al.*, 1974; Kelsall, 1960). The energetic benefits derived from behaviour observed in response to natural and man-made linear features may in fact exceed the energetic costs of deflections as calculated by Geist (1975).

Paralleling behaviour appears to be, at least in part, a natural response to find the path of least energetic resistance. In a study of trail systems in northeastern Alaska, LeResche and Linderman (1975:54) found that: "Caribou follow contours in hilly terrain, use gentle slopes and passes, travel in narrow lines in steep areas; *course natural obstacles* [emphasis ours] before crossing them (see also Skoog, 1968); and follow previous caribou trails."

The foregoing examples of "natural deflections" are useful in explaining caribou responses to berms and other linear features in terms of their potential energetic and dislocation impacts. For example, it has always puzzled us that berms are perceived to represent physical barriers when berm-like features (eskers) and steep mountain ranges are commonly encountered in caribou range and are readily traversed by caribou. Thus the paralleling of "apparent obstacle effects" reported by Urquhart (1971, 1972), Surrendi and DeBock (1976), and Hanson (1980) can be explained in a manner which also accounts for apparently different thresholds of response to obstacles.

Hanson (1980) reported a barrier threshold of 1.2 m; Cameron and Whitten (1976) found that caribou crossed the haul road at a mean height of 1.43 m, selecting significantly lower heights over higher sections. Paralleling and selection for lowest crossing points explain the apparent difference in "barrier" thresholds for the same population. During migrations, Kaminuriak caribou unhesitatingly crossed drift fences 1.0–1.5 m high and jumped fences >2 m high (Miller *et al.*, 1972). The most logical explanation for these observations is that caribou actively seek the path of "least energetic resistance" rather than respond to physical barriers with a fixed threshold height.

That hypothesis, however, does not explain the "retreat behaviour" reported by Surrendi and DeBock (1976) and Hanson (1980). Retreat from berms or roadways may reflect responses to stimuli other than obstacle height (e.g. hunters, or perception of an earlier route). Control data on normal directional variations in movement are not available from those studies.

DISCUSSION

Human Impacts on Caribou Demography

One can draw conclusions about human impacts on population status by correlation reasoning; numbers changing coincident with disturbance. A more precise method is to measure reproductive or mortality rates and, without knowing their cause, correlate these rates with disturbance. One may attain a higher level of confidence by ascertaining reproductive and mortality rates, their causes, and their impacts on population size. The most sophisticated experimental design is to perturb the system (e.g. by removing wolves) and note *predicted* changes using both experimental and control populations.

Many biologists use correlation reasoning and imply cause-and-effect. Bloomfield (1980) noted that caribou declined coincident with habitat change, and he argued cause-and-effect. The Kaminuriak herd had low calf percentages in the 1970s; some Inuit believe that aerial harassment caused this low productivity. But there were few calves also in 1966-1968 (Parker, 1972), prior to extensive exploration in the north. Therefore, the supposed cause is not necessarily an actual one.

The main fallacy in the correlation argument for cause-and-effect is that other possible causes could have occurred simultaneously with the supposed cause. As the forests were logged in British Columbia, logging roads were built. Declines in caribou could have resulted solely from increased mortality from hunting made possible by improved access, and not from the loss of food and cover resources. Correlation evidence is the springboard to hypothesis testing. If habitat destruction is suspected as the cause, there are verifiable test implications. One might suspect low pregnancy percentages, or poor growth, or one might expect to find starved animals. If these test implications cannot be verified against control populations the hypothesis is not sufficient.

We disagree with Klein's (1980:525) statement: "Historically, fractured *Rangifer* ranges through human development activities have led to range abandonment, herd reduction, or extinction...". He has not documented fractured ranges for North American herds, or the demographic statistics of changes in reproductive or mortality rates that could cause such reductions or extinctions. Alternate explanations for caribou declines — unsatisfactory recruitment resulting from predation, and excessive mortality from hunting — are documented (Banfield, 1954; Kelsall, 1968; Bergerud, 1971, 1974a, 1980; Davis *et al.*, 1978).

Caribou probably can be displaced from ranges by complete habitat alienation, e.g. by agriculture or by extreme and persistent harassment. However, current industrial development activities in North America are not of this magnitude. Caribou in the Central Arctic herd have increased despite the extensive accumulation of structures and transportation facilities within their range, and the Western Arctic herd is expanding into this same development area.

Again we question Klein's (1980:523) conclusion: "Roads, railroads, pipelines, power lines, artificial or altered water courses or other man-made linear featurees can, independent of other human activities, block, delay or deflect the movements of caribou and reindeer." Clearly a large-diameter pipeline resting on the ground can be a barrier; however, to date there is no unequivocal example of such effects for a North American caribou herd.

In discussing possible barrier effects, Klein (1980) quoted authorities who lacked firsthand knowledge. For example, he cited Justice Berger (1977) with respect to the possible impacts of the Hudson Bay Railroad on the Kaminuriak herd. Justice Berger had based his opinion on Calef's testimony before the hearing; Calef, in turn, had said he did not know about the barrier effect of the Hudson Bay Railroad but that in Norway a railroad had blocked a migratory crossing. Calef was referring to Klein's (1971) reference to the Dovrefjell crossing.

In this review we have provided a more parsimonious alternative cause for many of the examples of hypothesized effects of barriers presented by Klein (1980). When herds have stopped crossing transportation corridors, it has generally been because numbers have declined and ranges contracted. The evidence shows such contractions to be independent of the presence of transportation corridors. Our explanation depends on the naturally evolved tendency of caribou to alter their movements and range in response to changes in their numbers. It does not require the added assumption and restriction that caribou have evolved behaviour in response to artifacts that were not part of their natural environment. The generalization is that caribou do cross transportation corridors.

We believe that some biologists, in their concern for disturbance at the individual level, may have overlooked the major population regulation factors of hunting and predation. At the First International Reindeer/Caribou Symposium, biologists debated the impacts of pipelines and northern development on caribou, yet the herds in Alaska at the time were declining from predation and overhunting (Davis *et al.*, 1980; Doerr, 1980).

We have reviewed the case histories of eight herds where human impacts on caribou demography have been suspected. One documented impact on caribou was an increase in calf survival following a reduction in wolf populations (also see Davis *et al.*, 1983). Calf survival in the Nelchina, Fortymile (Davis *et al.*, 1978), Central Arctic (Cameron and Whitten, 1979), and British Columbia herds increased following wolf reductions. The second documented impact was increased hunting mortality following improved access from transportation corridors: examples were the Nelchina, Fortymile, and British Columbia herds. The expansion of the Nelchina herd brought it in contact with an already existing road network and resulted in an overharvest. The Kaminuriak herd was little affected by increased access due to roads but was still overharvested.

The Porcupine herd represents a control population, stable in numbers and productivity and little affected by hunting or by predator management. Completion of the Dempster Highway through its range was accompanied by controls of hunting. This "control" population, exposed to a transportation corridor and to other human activities, has not demonstrated any significant demographic changes in response to these developments. There is no convincing evidence from any of the eight herds investigated that habitat loss or disturbance has adversely altered productivity or adult mortality rates, resulting in declines.

There is ample evidence, however, that hunting (much of which is subsistence hunting by native people), and low calf survival due to predation and other factors, are responsible for caribou declines (Simmons *et al.*, 1979; Bergerud, 1980; Davis *et al.*, 1980; Haber and Walters, 1980; Davis and Valkenburg, 1983).

The unsupported belief that human disturbance may adversely affect caribou has had at least one major repercussion. The Canadian Department of Indian and Northern Affairs has enacted "Caribou Protection Measures" which restrict entry and travel in the vicinity of the calving grounds of the Beverly and Kaminuriak herds between 15 May and 31 July. It is now considerably more difficult for biologists to research questions relative to calving — the key to our understanding of caribou demography. The Northwest Territories government requires that researchers obtain a research permit, and is quite prepared to deny access if native communities near the proposed research area do not give consent. Further, native observers are often required to be hired in major research programs.

These are serious restrictions on free movement in Canada and provide the potential for government interference in research by denying access to large areas of northern Canada. We note that ACUNS (1983) also has concerns in this area and has formed a committee to investigate these restrictions on research. The biological justification of these restrictions relative to the dynamics of caribou populations has not been documented.

Predation as a Factor Influencing Sensitivity to Disturbance

Predation is a "prime mover" in the evolution of behaviour patterns in caribou (*sensu* Wilson, 1975). Natural selection acts against those individuals that respond inappropriately. Predation thus reduces the behaviour repertoire of individuals, i.e., animals are more alike than they would be in the absence of predation. This selection results in animals adapted to avoid predation but does not necessarily improve their adaptation to other components of the environment. The reactions and sensitivity of caribou should be evaluated in the context of survival strategies which caribou have perfected in close association and co-evolution with wolves (Bergerud, 1974b).

Male and female caribou have far different parental investments because of polygynous breeding. The male's fitness depends on intrasexual competition for females. His role in propagation ceases upon breeding. The female must continue her care until the calf has a reasonable chance of survival or dies. Because of these investment differences females can be expected to be more wary and select more predator-free habitats than males, even at the expense of optimal foraging. Thus, disturbance reactions are greatest on the calving grounds after the birth of the calves; here selection is the harshest culler.

Human activity can upset predator-prey relations. After caribou have habituated to the presence of humans, they may seek human activities because of reduced predator abundance. The caribou from Lake Nipigon, Ontario, winter around the Armstrong airport, probably because of favourable foraging in the absence of predators. Moose may show the same response on Isle Royale (R. Peterson, pers. comm. 1981). When we modify the habitat we may aid wolves in their searching effort — a trail built through caribou escape habitat in Pukaskwa National Park, Ontario, is an example. Small reduced stands of climax forest may attract caribou and act as traps — predators know where to search. Logging-road networks become travel routes for wolves (Bibikov, 1980). Haul roads may be avoided by caribou because of increased predator presence (Roby, 1978). Wolves followed a snowshoe track made by ATB and found caribou that previously had been secure on a mountain refuge surrounded by soft deep snow. Seismic lines provide opportunities for wolf ambush, as do roads in forest valleys. The examples are many and will become more explicit when we know more about the strategies used by both caribou and wolves in their interactions. Human activities can potentially affect caribou indirectly through their alteration of predator-prey systems.

We believe that the major environmental variable that permits caribou to co-exist with predators is space. Caribou need extensive areas so as to space themselves far from denning wolves. Again, space is needed that will provide habitats where caribou have a slight advantage such as mobility. The greater the space the greater the chance for dispersal of caribou, which increases the searching time for wolves. Huffaker's (1958) complex space for fluctuating predator-prey oscillations applies to caribou.

As herds increase they take up more space. The Nelchina, Fortymile, and Newfoundland herds faced hunters in firing lines along transportation corridors but continued to migrate to meet their spatial requirements. However, there must be a point where harassment is so continuous and severe that animals will no longer pass. Such potential barriers must be prevented if caribou are to maintain their populations in natural environments.

Adaptability of Caribou

Caribou are perceived by many as not adaptable to the presence of humans. Yet caribou are one of the few large mammals man has been able to domesticate. One basis for this misconception is their unwary behaviour. Caribou escape strategies, i.e. detecting motion, grouping up, and standing ground or approaching and verifying, which are successful for natural predators, are ill-adapted to men with firearms.

Caribou are as adapted as other North American ungulates to man's presence. When caribou are captured and placed in holding pens they become calm within hours. Moose captured in Newfoundland remained in a state of panic and many died in captivity (Pimlott and Carberry, 1958). Recently ATB placed wild adult caribou in a game farm and within two weeks they could be approached to within 10 m. Within two months the animals would enter a shed and stand on a scale for weighing. The large herds of caribou feeding along the highway on the Avalon Peninsula, along the TAPS corridor, and along the Dempster Highway are comparable to the herds of habituated pronghorn antelope (*Antilocapra americana*) on the Great Plains, which feed beyond rifle range. Caribou, like pronghorns, also crawl under fences (Miller *et al.*, 1972). Caribou wintering at Armstrong, Ontario, may be avoiding predators as are mule deer (*Odocoileus hemionus hemionus*) that visit downtown Waterton, Alberta (Geist, 1980). Caribou may be found on the highway near McBride, B.C., as are road-wise elk (*Cervus canadensis*) in Banff and Jasper National Parks. Caribou learn that chainsaws signal availability of arboreal lichens, just as black-tailed deer (*Odocoileus hemionus columbianus*) approach felled trees to gain access to browse. The sight of caribou standing on the railroad or stopping the Churchill Express recalls the migration of buffalo (*Bison bison bison*) in the past.

But, adaptable as the caribou is, it still has the same problems as the buffalo — overharvest and the need for space. Our conclusion is that caribou can tolerate and adapt to the presence of man if we will permit them to live by not overharvesting. Caribou will cross major transportation corridors and physical obstructions to maintain their space, but there is probably some upper limit to their tenacity. We must not permit the dissection of caribou populations into small discrete units so that they lose their ultimate adaptation — mobility, to seek space to cope with an ever-changing extrinsic environment.

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Mr. HERRERA. Oh, I think there is every justification for that hope, yes, Senator. Clearly, the field, the permanent facilities are going to be designed to take note of the caribou requirements. And I think we know what those requirements are now. And that design, coupled with the ability of caribou to habituate to the presence of these structures, I think will guarantee virtually that they are not going to come to any harm.

Senator MURKOWSKI. Mr. Hermiller, we continually read in the media the question of, is the pipeline safe and is it, you said that there have been no leaks for 14 years, but somebody tried to shoot it and somebody wrapped it in dynamite and so forth. So you think that your record of maintaining an oversight has been pretty responsible.

But why does the press continue to generalize that somehow this is an unsafe pipeline or there is an investigation here? I think we have got something now where our fishermen are stating that there ought to be another evaluation because of reports. What is behind all of this? Is somebody mad at you or something?

Mr. HERMILLER. From the perspective of the pipeline itself, Senator, the major question that arises in the press surrounds the corrosion question. And as I stated, we have never had a leak from corrosion on the main pipeline. The corrosion that is discussed in the press actually affects, as I said in my testimony, less than 2 percent of the pipeline. And I think we have a very good story to tell on the corrosion issue.

I think that the technology that has been developed by Alyeska is at the leading edge. There is no large-diameter pipeline anywhere in the world that has the corrosion program, the corrosion detection program that Alyeska currently has. I think it is a very good story, and we are maintaining that line at the 2.1 million barrel per day capability. So I think we have a very good story to tell.

I would also add that as far as the pipeline itself is concerned, there is no enterprise that I am familiar with in the pipeline industry that is as heavily regulated as the pipeline. We have at least 9 or 10 regulatory agencies that are currently providing oversight.

So I can only tell you that, certainly in the press, when the pipeline is described as being paper-thin, the stories I think are actually, would point to someone who has a different agenda, and certainly would like to badmouth the pipeline. Because obviously the pipeline is a very important link in developing ANWR. And I can only think that many of the things that are directed against the pipeline are simply a reason for discredited the pipeline so ANWR can be discredited.

I think the other part of this, in addition to the pipeline itself, is what we have done at Valdez since the 1989 oil spill. We currently, I think, have the best program of oil spill prevention and response anywhere in the world. And I would emphasize the word prevention, because we are heavily oriented in that directed. And as Admiral Ciancaglini testified earlier, we have escort vessels, we have drug testing, we have alcohol testing. We have 400,000 barrels of capacity at the current time in terms of storage and spilled oil, and we are at the point where we have 25,000 barrels per hour pick-up capacity. We will soon have that capacity.

So I do not think there is any facility anywhere in the world as manned to the extent that Valdez currently is, with either manpower or equipment.

Senator MURKOWSKI. Mr. Hermiller, tell me a little bit about what would happen if we do not initiate an ANWR lease-sale and do not find oil, if we do initiate a lease-sale. What happens to the pipeline, in your time sequence, recognizing that there may be additional fields, or may be additional recovery associated with Prudhoe Bay field? What is the general——

Mr. HERMILLER. Well, our long-range——

Senator MURKOWSKI [continuing]. Scenario? What is your long-term, when is it going to shut down?

Mr. HERMILLER. Our long-term view of this, and of course, depending on whose statistics you are using, the Department of Revenue in the State of Alaska would have the most optimistic throughput predictions. But obviously any forecasting is difficult, particularly if the future is involved. But currently we see the pipeline rate as being somewhere in the 500,000 barrel per day range in the year 2007.

Senator MURKOWSKI. 2007.

Mr. HERMILLER. It goes down progressively. In 1995, about 1.5 million; 1997, about 1.2 million; 2005, somewhere in the 700,000 barrel range. And then in 2007 we would be at the 500,000 barrel-per-day range. Currently we think, and again, where the price of oil goes certainly would be part of this equation, but we see at the current price of oil in real terms and the current costs of operating the pipeline, that 300,000 barrels a day is the level at which you would look at the pipeline's operations as being uneconomic. And this was, of course, testimony earlier today by the Department of Energy.

Technologically, you probably can run the thing. But you start spreading out the costs over a much smaller volume, and the unit cost of moving a barrel of oil become almost prohibitive.

Senator MURKOWSKI. What are you, what is your obligation if you shut it down?

Mr. HERMILLER. Under the, under the grant of right-of-way, we are of course obligated to remove all traces of the pipeline, certainly the above-ground pump stations and any kind of collateral equipment.

Senator MURKOWSKI. I would assume that if you remove the pipeline, I would assume that all activities associated with oil production in Prudhoe Bay would be removed. And what would the area revert to?

Mr. HERMILLER. I would assume that everything would stop on the North Slope, with no way to transport oil. And the area, the corridor that the pipeline currently occupies would revert to some kind of natural state. Whether you would say it is the same natural state that is existed to prior to the time the pipeline was there is open to question. But certainly it would revert to some kind of natural state.

Senator MURKOWSKI. And the physical construction of buildings and materials in Prudhoe Bay, I assume, would achieve the same state?

Mr. HERMILLER. That would be my, certainly my guess, Senator.

Senator MURKOWSKI. And if, if that time, then, is somewhere, estimated at what——

Mr. HERMILLER. 2009——

Senator MURKOWSKI. 2020 or something?

Mr. HERMILLER. 2010, something like that, you would be at the 300,000 barrel a day range.

Senator MURKOWSKI. And the same application would occur if we allow leasing in 1002 area and there is oil found, and once it is depleted. So unlike other areas, there is not likely to be anything that would take its place, is there?

Mr. HERMILLER. No. I think we have factored into the numbers that were both presented by DoE and by me, what is seen out there in the other marginal fields that may come on-stream between now and 2007, 2009.

Senator MURKOWSKI. I assume one could make an argument that gas potential may have a marketing capability which would maintain some existing presence there.

Mr. HERMILLER. Well, and obviously if the gas is exploited on the North Slope and the gas pipeline is built that will parallel essentially the Alyeska corridor, there will be that activity in the area, too.

Senator MURKOWSKI. I would ask Mr. Yeager or Mr. Matz, as you oppose the ANWR legislation as a whole, and recognizing the funding in Senator Johnston's legislation for alternative energies and reclamation is ANWR, if you have any other suggestions on where that funding could come from? I think we are looking at somewhere in the area of about $1 billion for that portion or that share that would come back for culmination of reclamation and alternative development. Maybe it is a $1.5 billion; I think it is.

Mr. YEAGER. We have not necessarily proposed an alternative formula, but over the years we have suggested a number of possibilities for places where you could get funds. One of them was suggested by Senator Bradley, which is the, a modest, almost so modest as to be innocuous, gasoline tax that would replace that same revenue.

The other suggestions that have already been introduced this year in Congress include an oil fee or an oil price floor kind of suggestion, as was suggested by Representative Panetta, where you could rebate portions of that fee for activities, including research and development, or including low-income housing weatherization or LIHEAP-style programs.

I think from our point of view, we believe that in terms of its overall effect on the economy, a modest fee on oil or on carbon fuels in general is a preferable, is a preferable mechanism, because it not only has the effect of getting much-needed revenue, but it also would tend to stabilize the fundamental energy price at a level which would allow stability for alternative sources of energy as they become marketable.

Senator MURKOWSKI. Well, I am going to summarize very briefly. I think as we look at our experience in the Persian Gulf and recognize that we were there to combat naked aggression, that most of us would be honest enough to admit that we were also there to keep oil flowing from the Persian Gulf for the benefit and appetite of the western world.

And, you know, an awful lot of our allies, allied men and women, have made the ultimate sacrifice. We hope that does not occur again. But the difficulty I have, gentlemen, is the fact that that part of the world controls basically the volume of crude oil because of their huge reserves. And if one looks at what the Saudis have been able to pick up as a consequence of Kuwait being shut down, and Iraq, they would simply increase their production by about 5 million barrels a day, and have been able to continue supply.

And I think OPEC is smart enough now to keep the price of oil at a relatively modest range, somewhere around $18 to $25 a barrel, in that range, to ensure that other alternatives do not come in on the economic stream, so to speak, and come competitive. They want that continued dependence on oil by the western world.

And then one listens to Schlesinger and some others that suggest the tremendous rate of growth of the third world on oil for transportation and automobiles, and the fact that, you know, we are going to be controlled by this cartel for the foreseeable future unless we want to somehow use our leverage, which is to try and decrease that dependence by alternative energies, energy conservation.

And I think, in my own belief, ANWR should be a part of that, at least for the determination of whether we have significant reserves. Because, gentlemen, if we find an oil flow of 500,000 barrels a day in ANWR, well, it is relatively significant. It also reflects on a lateral pipelines of some 60 or 70 miles to the existing pipeline, and I imagine the economics are going to be.

But if it is a substantial reserve, and you never know unless you find out by initiating exploration, why, then it could have a substantial offset to relieving our dependence on mid-East oil. And we will never know unless we initiate it. And I guess we can go through this argument from time immemorial, because I happen to believe that we need all of the above.

And, you know, why sit for extended periods of time and debate the issue of clean air? And I know the environmental communities attitude toward nuclear power, and I respect it but I do not agree with it. Because I look at France, where they have attained 70, 75, 80 percent now, of their energy from nuclear power, and they are reprocessing their high-level nuclear waste; we are simply burying ours. And the Japanese are having the French reprocess, they are going back and initiating with the plutonium recovery re-injection into the reactors.

And we seem to be caught up in a commitment to try and be responsive to all concerns. We want clean air, but we do not necessarily want to buy the type of power generation that might allow us the most immediate greater achievement of that by nuclear, for good reason in this country.

But somebody has got to make the hard-nosed decisions, and it appears to me that for the indefinite future, at least, we are going to need all of the above simply because we cannot control, by our actions, the demand on the world's supply of oil. That is going to be controlled by the world, and portions of the world are going to be utilizing crude oil at a much more rapid rate of growth than we are.

So with that profound generalization, I will thank the staff and the recorder and the witnesses, and wish you a good day. And the record will remain open for 1 week, and we want to invite you to communicate with any questions that you think are appropriate, because this is the last hearing for this time around on ANWR. I wish you a good day. Thank you.

[Whereupon, 1:57 p.m., the hearing was adjourned.]

[Additional statements for the record follow:]

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STATEMENT
OF
JAMES L. HENRY
PRESIDENT
TRANSPORTATION INSTITUTE
BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
U.S. SENATE
WASHINGTON, D.C.

MARCH 12, 1991

NATIONAL ENERGY POLICY FOCUSING ON ARCTIC NATIONAL WILDLIFE REFUGE AND STRATEGIC PETROLEUM RESERVE

The Transportation Institute, a research and educational organization representing over 140 U.S.-flag vessel operators engaged in all forms of waterborne commerce in both the domestic and international trades, is supportive of congressional efforts to enact a comprehensive national energy policy. For too long, we have postponed formulation of such a policy as the mere essence of a national strategy has been debated. However, circumstances in the Persian Gulf have once again made the nation aware of the economic and national security vulnerability that it has imposed on itself as a result of the continuing dependence on foreign energy sources. Forging a comprehensive program that takes into consideration all of the essential components -- conservation, efficiency, production, reserves, and alternative energy sources -- is formidable. However, through the acceptance of a number of difficult choices the nation will achieve a strengthened economy and improved national security.

The U.S.-flag maritime industry is anxious to contribute to a sound energy program and looks forward to the enactment of a viable national policy which will prove beneficial to the American public and American industry. We are especially interested in two aspects of the current debate which would impact directly on the U.S. merchant marine -- Arctic National Wildlife Refuge and the Strategic Petroleum Reserve -- and urge the Committee to give favorable consideration to the inclusion of these elements in the energy package reported to the full Senate.

Recent events in the Persian Gulf are a stark reminder of the dangerous degree to which our nation continues to remain dependent on foreign sources of oil. At a State Department-sponsored energy conference last month, a consensus of expert opinion concluded that heavy U.S. dependence on Middle East oil will continue through the 1990s. Saudi Arabia, Iraq, the United Arab Emirates, Kuwait and Iran possess 65 percent of the world's known oil reserves and 90 percent of its extra oil production capacity. Meanwhile, U.S. oil production last year fell for the fifth consecutive year -- to its lowest level in 25 years. During the first half of 1990, the United States imported 50 percent of its total oil consumption with roughly 25 percent of its needs coming from the Persian Gulf. Projections contained in the administration's recently released National Energy Strategy affirm the nation's increased dependence unless a number of steps in both oil production and conservation areas are implemented. Such steps, are included in varying forms in both the National Energy Strategy (introduced last week as S. 570) and the comprehensive energy package (S. 341, the National Energy Security Act of 1991) sponsored by several members of this Committee and other legislative initiatives pending before the Congress, which if adopted, should assist the nation in lessening its dependence on foreign oil.

ARCTIC NATIONAL WILDLIFE REFUGE (ANWR)

The Transportation Institute believes that opening the coastal plain of the Arctic National Wildlife Refuge to exploration and subsequent environmentally sound development is one of the most important proposals put forth by either Legislative or Executive Branch policy-makers. Adding ANWR to America's oil reserves could help to prevent the threats to supply and severe price disruptions that rocked the petroleum markets last summer after the Iraqi invasion of Kuwait. Recently, the

Bureau of Land Management more than doubled its assessment of the marginal probability of oil discovery there from 19 to 46 percent, and increased the mean estimate of economically recoverable oil from 3.23 to 3.57 billion barrels. **In urging favorable consideration of ANWR development, the Transportation Institute's support is contingent upon an explicit provision that oil extracted from the Arctic National Wildlife Refuge be reserved for domestic consumption.** The maritime industry is grateful for the Committee's vote in the 101st Congress in support of such restrictions and is pleased that the Chairman has included this policy in S. 341 currently under review within the Committee.

A viable U.S.-flag tanker fleet is essential to the nation's economy and security during a national emergency. Last week, General H.T. Johnson, Commander of the U.S. Transportation Command, testifying before the Senate Armed Services Committee on the role of sealift to sustain military objectives in Operation Desert Shield/Storm observed that 4.2 million tons of refined petroleum products were moved as of 1 February, representing 99 percent of the fuel shipped to the Gulf. While these numbers appear impressive, it is important to heed General Johnson's warning that "as we move away from the threat of global war and focus our national strategy on the threat of fast-breaking regional conflict, we must maintain our ability to respond to wartime transportation requirements like those we've seen for Desert Shield/Storm while operating under the constraints of a peacetime economy. This fundamental shift in strategy places great pressure on our desire, as codified by the National Security Sealift Policy of 5 October 1989, to rely on the U.S. merchant marine for the majority of our defense sealift needs. If we consider peacetime economic pressures in light of the continued decline of the U.S. merchant marine, our ability to rely on U.S. commercial shipping may be eroding."

Today only 44 U.S.-flag tankers currently transport crude oil produced in Alaska to the lower 48 States. A decade ago, over 80 tankers were engaged in the Alaska oil trade and that number is expected to drop to less than 20 by the year 2000 if new sources are not developed on the north slope. Without an adequate tanker fleet, our nation's ability to produce the kind of outstanding military success we recently witnessed in the Persian Gulf will be severely limited. Ensuring a stable, consistent supply of cargo is the only way to guarantee the availability of these essential vessels and their trained civilian crews during times of emergency.

In terms of cost-effectiveness, there really isn't any viable alternative. Further contraction of the domestic tanker fleet will force many vessels into default, including those whose construction financing is guaranteed by the federal government. Additionally, if military planners cannot count on tankers from the private sector, they will have to acquire them for the Ready Reserve Force, with massive and continuous expenditures for maintenance and berthing, and no employed workforce to crew them.

Operation Desert Storm/Shield highlighted some of the difficulties in breaking out and mobilizing reserve vessels as a result of the decline in the nation's commercial shipping base. It is important to remember that the foreign-flag shipping upon which the Pentagon relied was available under extraordinary circumstances not likely to repeat themselves in the future. The build-up and deployment of forces in the Persian Gulf took place over the span of nearly half a year, during which not a single shot was fired. Further, the United States enjoyed a level of global unanimity and political support that was unprecedented. We cannot rely on these favorable conditions again. The U.S. must be prepared to "go it alone", as was determined by the findings of the presidentially appointed Commission on Merchant Marine and Defense in its 1988 report.

In addition to serving as a military asset, America reaps significant economic benefits from its tanker fleet as well. An active fleet is in a position to make payments on federally guaranteed loans. Employed tankers contribute substantial tax revenues to the Treasury, as do the seafarers working on the vessels. Their prosperity spreads to the ports on which they call, increasing shoreside employment and supporting related maritime industries. Reduced reliance on foreign oil would result in a parallel reduction in our balance-of-trade deficit. Safe, reliable U.S.-flag tanker service, combined with a dependable flow of oil as yielded by ANWR, would continue to provide stability to the domestic oil market.

During the debate over ANWR, a great deal of attention will be focused on the environmental impact. What has been frequently overlooked in the debate is the real choices facing the nation in arranging the transportation of petroleum products. Many of the environmental concerns in that area were addressed last year by the passage of the Oil Pollution Act of 1990. However, increased reliance on foreign sources of oil, necessitated by the lack of new production, or for that matter the export of domestically produced oil such as that to be found in ANWR, would subject our waterways and coastal areas to a parade of foreign-flag tankers. Many of these vessels don't come close to their U.S.-flag counterparts in safety and maintenance regulations, manning standards and technology, all of which could adversely impact the nation's environmental quality. Needless to say, none of these vessels would add one iota to our national security either. Environmental concerns alone dictate that it is wise policy to encourage U.S.-flag tanker operations whenever possible.

STRATEGIC PETROLEUM RESERVE

The Persian Gulf crisis reinforced to the nation the importance of the energy insurance policy encompassed in the Strategic Petroleum Reserve. As a result of its very existence, the nation was given a peace of mind that assisted it in weathering the energy storm resulting from the invasion of Kuwait. Regrettably, throughout the 1980s efforts to encourage a rapid SPR fill when oil prices were low were brushed aside in the wake of budgetary constraints. It was only in the last year that sufficient support was generated to allow for the enactment of legislation raising the target to one billion barrels. However, at the end of last year, the Reserve contained 585.7 million barrels of crude oil, far short of the newly established target.

As the Congress gives further attention to an expansion of the Reserve, the Transportation Institute urges favorable consideration to initiatives that will result in an increase fill to meet the one billion barrel target. **In this regard, we ask the Committee to resist any efforts to waive U.S. maritime policy in either the fill or drawdown of the Reserve.** The U.S. maritime industry, which in one breath is asked to serve as the nation's fourth arm of defense and sail into the Persian Gulf in harm's way, in the next breath is assaulted by the Administration through its blanket waiver of the Jones Act in the January drawdown of the Reserve. This action had the effect of giving heavily subsidized foreign-flag operators the same opportunities to bid for SPR oil transport as their U.S. counterparts, apparently with little or no thought given to the impact this would have on the U.S. tanker fleet, nor to the precedent it would establish should hostilities continue indefinitely. Preliminary estimates show the extent to which foreign vessels quickly entered the domestic trades when given the chance. Thirty-six percent of the drawdown movements were by tanker (mostly all foreign flag), two percent by barge and the remainder by pipeline.

The Transportation Institute is further alarmed that the Administration's legislative package (S. 570) to implement its National Energy Strategy calls for an exemption from "Federal contracting laws and regulations" in the event of a drawdown of a proposed Defense Petroleum Inventory to complement the Strategic Petroleum Reserve. While the U.S. maritime industry recognizes that there may be inadequate tonnage to meet all energy transport requirements, we maintain that there is no need to issue blanket waivers or statutory exemptions as they only serve to erode even further the ability of the U.S. fleet to meet its defense and economic obligations. In fact, in the past year an Energy Department, Customs Service and Maritime Administration agreement was ironed out to establish procedures to expedite waiver procedures of the cabotage statute in the event of a drawdown. Moreover, in early January John Easton, Assistant Secretary of Energy for International Affairs and Energy Emergencies, testified before the House Energy and Commerce Committee that the inter-agency agreement was adequate for handling an energy emergency. The Institute urges the Committee to reject any suggestions that maritime policy should be waived at the expense of energy policy.

CONCLUSION

The Transportation Institute believes that environmentally safe exploration and development of the Coastal Plain of the Arctic National Wildlife Refuge is strongly in the national interest, provided any oil produced is retained for domestic consumption. Anything less would be a betrayal of its promise as a key component of an overall energy strategy and would substantially weaken an already ailing merchant marine. We further believe that a petroleum reserve filled at complete capacity is the added insurance policy that will keep our economy running and military forces sustained.

A comprehensive energy policy should be multi-purposed serving the nation in varied ways. Participation in these programs as enunciated in long-established maritime policy will enable the U.S.-flag merchant fleet to contribute to both the nation's defense and economic securities. In his appearance last week before the Senate Armed Services Committee, General Hansford Johnson of the U.S. Transportation Command observed that "if rapid deployment prevented Saddam Hussein from moving his troops into Saudi Arabia, then mobility itself can be seen as a deterrent to military aggression." General Colin Powell, Chairman of the Joint Chiefs of Staff, took this thought a step further when he stated to the House Armed Services Committee on February 7: "Deterrence is only credible if we possess a robust means of power projection and the mobility to deploy and sustain our forces." A robust U.S.-flag merchant fleet as full participants in a national energy policy is a sure means to achieve this objective.

JOINT STATEMENT

Submitted by

C.E. DeFRIES, PRESIDENT
NATIONAL MARINE ENGINEERS' BENEFICIAL ASSOCIATION

and

TALMAGE E. SIMPKINS, VICE PRESIDENT
LABOR MANAGEMENT MARITIME COMMITTEE

and

J.P. WALTERS, EXECUTIVE DIRECTOR
AMERICAN MARITIME CONGRESS

to the

COMMITTEE ON ENERGY AND NATURAL RESOURCES
U.S. SENATE

IN SUPPORT OF
S. 341 AND OIL AND GAS DEVELOPMENT IN THE
ARCTIC NATIONAL WILDLIFE REFUGE

MARCH 12, 1991

JOINT STATEMENT SUBMITTED BY THE NATIONAL MARINE ENGINEERS' BENEFICIAL ASSOCIATION, THE LABOR MANAGEMENT MARITIME COMMITTEE, AND THE AMERICAN MARITIME CONGRESS

MARCH 12, 1991

The National Marine Engineers' Beneficial Association, a union of more than 50,000 members representing licensed and unlicensed mariners and others, the Labor Management Maritime Committee, the oldest labor management trade association, and the American Maritime Congress, an association representing nearly all major U.S.-flag vessel operating companies, want to make clear their strong support for S. 341, the National Energy Security Act, and for a key component of this Act, Title IX, which opens part of the northern portion of the Arctic National Wildlife Refuge (ANWR) to oil exploration and development. We believe that action now on ANWR is extremely important to America's long-term economic, energy, and national security.

We also believe that if ANWR is opened up the oil produced should not be for export. S. 341 does just this. We are pleased that this legislation in its "Subtitle G. Export Restrictions" (Section 9701), reiterates and includes the vital oil export restrictions of the Export Administration Act of 1979, as amended. Inclusion of Section 9701 with these restrictions makes it absolutely unambiguous that any oil discovered in the ANWR area should be used for domestic consumption only. We have long believed that these restrictions should be written expressly into any legislation authorizing ANWR exploration and development. It is not enough to assume that the export issue is solved simply because ANWR crude will most likely travel through the Trans-Alaska pipeline to Valdez and hence be subject to the restrictions already contained in the Export Administration Act of 1979. Crude oil from ANWR might, for example, be transshipped along the northern coast of Alaska to larger supertankers waiting in the Arctic Ocean above the Bering Strait. If ANWR oil followed this path of transportation, every barrel could go for export.

Allowing the export of ANWR oil would be poor energy policy (when we already import at least 50 percent of our oil), as well as poor security policy (since we would have to import more oil from the Middle East to replace any exports). Indeed, we believe that making clear to the American people that ANWR oil will be for domestic use -- for energy security -- is fundamental to public acceptance of ANWR development from the start.

If exploration and development are permitted, they can only be justified in terms of energy security. And if this is the case, then Americans should receive ironclad assurances that energy security will not be tossed out the window for quick profits from exports once approval is granted. We applaud the fact that the

Chairman and Senator Wallop have included these export restrictions in the original bill. These restrictions will help build support for ANWR exploration and development, and they will help build support for S. 341 in its entirety.

Mr. Chairman, we are submitting this statement, and we have joined others in a coalition to promote ANWR development for three basic reasons.

First, opening ANWR is of great importance to the future of America's maritime industry, particularly its tanker fleet. Today, U.S.-flag carriage of Alaska's North Slope crude oil accounts for approximately one-half of the U.S.-flag tanker fleet. As Prudhoe Bay and other fields to the west of ANWR draw down, business for these tankers will dwindle accordingly. ANWR, therefore, offers decades of potential cargoes for a fleet that otherwise would shrink with alarming speed. The more we delay on ANWR, the more there will be a gap between Prudhoe Bay wind-down and ANWR start-up. Tankers and crews would be idled and lost, the former to the scrap heap and the later to other professions. For our industry, delay and more delay is not an acceptable course.

Our second reason for supporting ANWR development is that the benefits to our national security of opening a portion of the ANWR area to exploration and drilling are undeniable. Its oil would flow just as Prudhoe Bay product is expected to be reduced significantly. It would help maintain the U.S.-flag merchant fleet and its availability for national defense -- a priority that Operations Desert Shield and Desert Storm have shown to be an absolute necessity. It would provide America with an energy supply "cushion" that -- in conjunction with increased conservation and continuing efforts to reduce energy consumption and develop alternative energy sources -- would be vital in the early years of the next century. And it would reduce American dependence on imports of foreign oil, especially from the ever-volatile Middle East, helping to preserve our ability to act independently as a great nation with global responsibilities must do.

This second point, we believe, is what the entire argument over this issue boils down to -- national security and national freedom of action. Our nation will, of course, always require some imports, but opening this new field and using it to reduce imports, in conjunction with continued efforts to conserve, will enable our nation to keep these imports at prudent levels. For this reason, we reiterate that oil obtained from the ANWR area should be for domestic use only, to reduce our dependence on foreign oil as Prudhoe Bay has done already, and so successfully, for the past decade. To us, it is abundantly clear that locking away this oilfield of enormous potential in a "wilderness" status forever would only diminish seriously our national security and political and economic freedom of action -- assets that are as vital in today's world as they have been in decades past. Local environmental impact can be minimized and dealt with successfully as it already has been in the Prudhoe Bay area. Indeed, the Prudhoe Bay experience, and the lessons learned from it, offer the opportunity to reduce even further the environmental impact that may come from exploration and drilling in the ANWR area.

Our third basic justification for ANWR development concerns our nation's trade deficit. Every barrel we develop at home is one less barrel we have to pay for abroad. The barrels we develop at home could mean hundreds of billions of dollars saved in our trade deficit over the projected life of the ANWR fields. Given the importance of this deficit to our economy, ANWR development clearly can be extremely beneficial to all Americans.

For all these reasons, we believe strongly that exploration and drilling in the ANWR area should be permitted on an expeditious basis so long as it is made clear that ANWR oil will not be exported. Any solution less than this is simply one our nation cannot afford.

Finally, Mr. Chairman, we would like to congratulate you, Senator Wallop, and this Committee for your strong leadership to create a national energy plan of action for America. Our nation needs this plan and you are owed a debt of gratitude for creating it and for moving promptly to see that it moves from concept to reality. We would also like to make one general observation about

S. 341 as a whole. We believe that it can be the foundation for a sound, workable national energy policy because it represents not only an effective plan for action but a plan that genuinely seeks compromise and support from all quarters. It is a plan that can bring Americans together. We commend this approach and the foresight and wisdom that you and the Committee have shown in taking it. This is legislation that can become law; this is a plan that can work for our nation. We are proud to support it.

Thank you.

IAGC
INTERNATIONAL ASSOCIATION
OF GEOPHYSICAL CONTRACTORS

March 6, 1991

The Honorable J. Bennett Johnston
Chairman
Committee on Energy and Natural Resources
SH-136 Hart Senate Office Building
Washington, D.C. 20520-1802

Dear Senator Johnston:

I am pleased to submit the International Association of Geophysical Contractors' "Statement for the Record" in conjunction with the Senate Energy and Natural Resources Committee's hearing on S. 341, "The National Energy Security Act of 1991". We appreciate this opportunity to express our members' views.

We strongly support Title IX of S. 341, which would permit oil and gas leasing in the Alaska National Wildlife Refuge. However, we urge the Committee to address the need for pre-lease geophysical exploration so that the objectives of Title IX can be attained in the most highly efficient, profitable, and environmentally sound manner.

We will be happy to respond to any questions you may have about our position and look forward to working with you and the Committee staff on this legislation.

Sincerely,

Charles F. Darden

Charles F. Darden
President

CFD/lfd

attachment

STATEMENT FOR THE RECORD

This statement is submitted for the record by the International Association of Geophysical Contractors ("IAGC") in conjunction with the Senate Committee on Energy and Natural Resources' hearing on S. 341, the "National Energy Security Act of 1991," on March 12, 1991. The IAGC is a trade association representing the geophysical industry. It has over 175 members, who collectively represent 90 percent of the international seismic geophysical industry.

The IAGC strongly supports the objectives of Title IX of the Johnston-Wallop bill which would permit oil and gas leasing in the Arctic National Wildlife Refuge ("ANWR"). However, as currently drafted, the bill would not achieve the most highly efficient, profitable, and environmentally sound means of leasing or exploration and development, because it fails to address a critical element in the oil and gas exploration process -- pre-lease geophysical exploration.

The IAGC's position is that S. 341 should explicitly authorize the Secretary of the Interior to approve geophysical exploration plans and issue special use permits for seismic exploration of the ANWR's coastal plain immediately upon enactment.

Moreover, we urge the Committee to make clear to the Secretary that he currently is authorized under existing law to receive and process applications for approval of geophysical exploration plans for the coastal plain of the ANWR. Because application processing can involve significant time, this action will enable the Secretary to be in a position to approve these plans and issue special use permits for seismic exploration immediately upon enactment of S. 341. The Secretary's review of geophysical exploration plans would entail additional environmental review which would be beneficial, whether or not leasing ultimately takes place.

Because the review process can take up to a year, only the Secretary of the Interior's immediate willingness to accept and process geophysical exploration plan applications for the ANWR's coastal plain can enable timely and properly timed seismic exploration.

The Nature of Seismic Exploration

The geophysical industry is perhaps the least understood segment of the oil exploration industry, yet it performs a critical function as the "leading edge" of exploration.

Seismic exploration is conducted by introducing an acoustic signal into the ground. On land, the signal is introduced by placing weight on the ground and vibrating it at a controlled frequency with tracked vibrator units or by the conventional shothole-explosive technique. This signal travels down through the earth where it is both bent ("refracted") and reflected by subsurface strata.

The extremely faint echoes of this signal are recorded by very sophisticated and specialized geophones placed on the ground and attached by cables to specially equipped vehicles. The recorded echoes are then subjected to intense computer processing.

The result is a "map" of the subsurface strata, resembling a "slice" through the earth. In the hands of skilled explorationists, these slices can reveal important clues as to the probable location of underground structures likely to hold oil or gas.

Generally, the research is conducted in a precise pattern of perpendicular lines in order to form a grid. By compiling the data produced from each line, it is possible to get a representative "picture" of the area underlying a particular lease sale area, or prospect within that area. In fact, if the lines along which the data are collected are spaced closely enough, it is possible to construct a three-dimensional picture of the subsurface.

Seismic exploration causes only minimal short-term disturbance of the earth's surface or subsurface and no long-term environmental effects. In an area such as the ANWR, seismic exploration is conducted only during the winter season to avoid any negative impact on the permafrost.

The acquisition of these data is one of the initial steps in the petroleum exploration process. It is often performed in advance before a given lease sale is scheduled. This is done in order to give the geophysical company enough time to collect and process the data it has acquired and to give the exploration company sufficient time to evaluate the data and make a decision as to whether it will participate in the competitive bidding process. The data also form one of the most important bases for the oil company's decision as to how much money it is willing to bid for a given tract.

The Current Situation

Limited seismic exploration was conducted on the ANWR coastal plain in the early 1980s pursuant to the resource assessment provision in Section 1002 of the Alaska National Interest Lands Act (16 U.S.C. § 3142) ("ANILCA"). That data is now more than five years old. Discussions with potential oil company bidders indicate that many of them may be interested in obtaining more seismic data on the coastal plain than is currently available.

However, there is disagreement whether the Secretary of the Interior is currently authorized under the provisions of Section 1002 to continue to issue special use permits for seismic exploration in the coastal plain of the ANWR.

We think that the Secretary of the Interior currently has authority under Section 1002, at a minimum, to accept and process geophysical exploration plans up to the point of approval. The Interior Department regulations at 50 C.F.R. Part 37, aside from the dated deadlines, still provide up-to-date review standards and a process for review of geophysical exploration plans submitted by qualified applicants. We see no reason why the Secretary cannot accept and process geophysical exploration plans and applications for special use permits up to the point of approval.

Early Seismic Exploration is Critical to Achieving Title IX Objectives

S. 341 would mandate a relatively early lease sale, within 27 months of its enactment. The stated objectives of Title IX of the bill are to proceed with oil and gas development in the coastal plain of the ANWR to meet our nation's energy needs, to provide revenues for energy-related projects and programs, and to avoid any "significant adverse impact" on the environment.

IAGC believes that early and extensive seismic work is critical to achieving the stated objectives of Title IX. It is important that the expertise of the seismic exploration industry be brought to bear on the task of geophysical exploration prior to leasing. While a moderately good data base, adequate for purposes of the Section 1002 report, has been formed by previous geophysical exploration, companies planning to risk hundreds of millions of dollars in lease sales and exploratory drilling need more and better data on which to base their bidding and exploration strategies.

New techniques for seismic data collection and analysis would update, refine, and enhance existing data. To achieve efficient and timely development with minimal environmental disturbance, the IAGC believes that seismic exploration by qualified geophysical companies is desirable, enabling more territory to be covered more thoroughly. Even though some data collected may overlap in some areas, each set of seismic data will not be duplicative but will yield different information. This is due to differences in collection techniques and in processing and analysis. Seismic exploration by qualified permittees can be done with minimal temporary environmental effects and virtually no permanent effects.

The more seismic work that is done with the latest techniques, the easier it will be for potential bidders to identify specific areas of interest and to take greater risks in bidding for lease tracts. The more data that is available to them, the more likely it is that higher bids will be received at the lease sale, resulting in an enhancement of lease sale revenues.

Further, additional seismic work utilizing the latest techniques will make it easier to pinpoint and minimize exploratory drilling so that environmental effects of development can be minimized, as well as the time and effort required to bring a field into production.

Early and thorough geophysical exploration of the coastal plain is important because it would reduce the time and effort ultimately necessary to bring the enormous potential of the ANWR into production.

Timeliness of geophysical exploration is a key element in achieving the objectives of S. 341. It is important to give the geophysical company time to do the work and process the data it has acquired. Unique time constraints due to Alaska conditions heighten the need for proper timing because seismic exploration in the ANWR can only take place during the winter season. It is also important to give the exploration company sufficient time to evaluate the data and make a decision as to whether and how it will participate in the competitive bidding process.

Thank you for inviting us to submit this testimony for the hearing record on S. 341. We appreciate the opportunity to express our views on this matter of vital national interest. Our members look forward to the opportunity to submit ANWR geophysical exploration plans to the Secretary of the Interior for review, and we look forward to working with you on this legislation.

JACOB ADAMS

PRESIDENT

ARCTIC SLOPE REGIONAL CORPORATION

TESTIMONY
SUBMITTED FOR THE RECORD
ON
TITLE IX OF S. 341 AND TITLE III.A. OF S. 570
BEFORE
THE SENATE ENERGY AND NATURAL RESOURCES COMMITTEE

March 12, 1991

Mr. Chairman, my name is Jacob Adams. I appreciate this opportunity to submit testimony for the hearing record on S. 341 and S. 570.

I do so in my capacity as President of Arctic Slope Regional Corporation (ASRC). ASRC represents the views and interests of our 6,000 Eskimo shareholders who live in eight remote Villages on Alaska's North Slope.

1. Introduction

The future status of the Coastal Plain of the Arctic National Wildlife Refuge (ANWR) is of critical importance to the nation's long-term economic well-being and to its energy security. The status of the Coastal Plain is also of critical importance to the future well-being of the more than 6,000 Inupiat Eskimo people who are the full-time, year-round residents of Alaska's North Slope.

2. Prior Testimony and Subsequent Events

Representatives of ASRC testified before this Committee on two occasions in the 100th Congress and again in the 101st Congress. I would like to incorporate our most recent prior testimony as Appendix A to my statement.

Much has happened since the last time we testified before this Committee in early March of 1989. On March 24, 1989, the Exxon Valdez ran aground in Prince William Sound. In the following months, Congress and the Administration reduced their focus on the need to address a comprehensive national energy policy and instead turned their attention to increased concerns over potential environmental impacts of oil development. As a result, Congress temporarily suspended consideration of legislation to open the Coastal Plain of the Arctic National Wildlife Refuge for oil exploration and development. Many of the concerns over environmental impacts of oil development were addressed last August in historic oil spill liability legislation which we, as residents of the North Slope, welcomed as a greatly needed environmental protection measure.

On August 2, 1990, Saddam Hussein invaded Kuwait and gained temporary control of 20 percent of the world's known oil reserves. As a result of the subsequent United Nations-sponsored economic embargo against Iraq, the United States lost access to nearly 9 percent of the energy it had been importing. In February the conflict in Kuwait was brought to a swift conclusion.

In recent weeks the President submitted his National Energy Strategy and legislation to implement that strategy. The nation's attention is now focused on developing a national energy policy which meets national security requirements, economic needs, and environmental goals.

3. ASRC's Interest in the Coastal Plain Decision

The interests of the Inupiut Eskimo people in the Coastal Plain are social, cultural and economic. The pending Congressional decision on the future of the Coastal Plain will determine whether or not my people will have a long-term tax base from which to provide essential and minimal public services. It will also determine whether there will be jobs and economic activity for our young people and our children. Finally, this decision will determine whether we, the people who once held aboriginal title to Prudhoe Bay and all of the North Slope, will be permitted to develop the 92,160 acres of highly prospective private lands that we own at Kaktovik Village.

Let me summarize briefly my people's specific interests in the Coastal Plain.

a. Tax base, public services and local government

Prior to Prudhoe Bay, there was no tax base and no effective means to provide essential public services to the people in our eight remote Villages. In these Villages, sewage service was by "honey bucket." Water was hauled by sled from lakes and streams. Our children were sent to BIA schools thousands of miles away. Access to medical care was closed. Fire and police protection were nonexistent. Electrical service was unreliable. Communication with the outside was sporadic. Housing was very poor. The cost of food and essentials was many times that of other areas of the United States.

My people survived by their wits, by barter, by subsistence hunting, and by sharing.

Prudhoe Bay's discovery and subsequent development brought major changes. These changes included, for the first time, a local tax base and an opportunity to establish a local Borough (County) form of government. The "North Slope Borough Government" we established in 1972 has addressed our most important needs for essential public services. For the first time, our Villages are now able to provide our people police, fire, medical and educational services. The Prudhoe Bay industrial tax base made this possible.

b. ASRC and private economic development

Prudhoe Bay's discovery also brought, for the first time, jobs and an opportunity for economic activity to my people. Through ASRC, our regional corporation, and our Village Corporations, my people are part of this activity. We now own small construction, pipeline and oil field service companies which generate profits and provide jobs for our people. Development activities at Prudhoe Bay and other new fields made this possible.

c. Value of our private lands

Finally, Prudhoe Bay's discovery and the construction of the Trans-Alaska Pipeline gave economic value to the mineral estate of our lands and to our land selection rights granted under the Alaska Native Claims Settlement Act. Through lease and business relationships with major energy companies ASRC has generated capital to expand our construction and service companies and to create new jobs.

Unfortunately, the revenue from our lands, to date, has been only from leasing our lands. Thus far, we have no commercial oil or gas production on our land.

d. Uncertain economic future

Obviously, all of these developments have improved my people's quality of life. They have opened new educational, employment and economic opportunities.

But, in major respects, our future is still very uncertain: my people's future is linked to the pending Congressional decision on the Coastal Plain.

If there are no new major discoveries made on the North Slope soon, Prudhoe Bay's production will go into a steep decline throughout the 1990's and will end sometime early in the next century.

In ten to fifteen years, we will see our Borough tax base seriously eroded. This means the minimal services we enjoy today will be cut back.

We will also see job opportunities disappear as North Slope production declines and activities are reduced to a "maintenance" level operation.

Finally, economic opportunities for our Eskimo-owned companies on the North Slope and the economic value of our land will disappear.

That is the future we see if Congress does not open the Nation's best prospect for new "world class" reserves to leasing.

The only bright spot we see is the short term jobs that will eventually come from dismantling the pipeline and other facilities on the North Slope and shipping them South for scrap iron.

e. Nation's best prospect and need for decision

If, however, Congress decides to open the Coastal Plain to leasing and properly regulated development, we see a much brighter future, for us and for the nation.

No one disputes that the Coastal Plain is the nation's best prospect for major new oil and gas reserves. This does not necessarily mean Prudhoe Bay's discovery will be repeated. It does, however, mean the potential is there for one or more Prudhoe Bay class discoveries. It also means that continuing the search for needed domestic oil will continue on the North Slope.

And continued exploration is what is necessary. The Bureau of Land Management now says there is almost a 50 percent chance for an oil discovery in the Coastal Plain. This newly revised figure more than doubled the probability of economic success from 19 percent to 46 percent, based on geological and geophysical data developed since the Bureau's original assessment in 1987. The Bureau also raised the mean estimate of economically recoverable oil in the Coastal Plain from 3.23 to 3.57 billion barrels. See Appendix B. Only a few weeks ago, BP Exploration stated that a probable 10 billion barrels of oil are yet to be found in Alaska. Clearly, the Coastal Plain's resource potential needs to be explored.

To date, only one exploratory well has been drilled in the Coastal Plain area -- our KIC No. 1 well on our private lands. Yet, the Department of the Interior has now identified 36 separate, potentially oil-bearing structures with four-way closure on the Coastal Plain.

The National Wildlife Federation's "independent" consulting geologist says Interior's projections are too "conservative," because they did not assess reserves in other potential Coastal Plain oil traps or the area's potential for major new natural gas reserves. The Congressional Office of Technology Assessment has concurred in this assessment.

The nation and my people deserve a decision from the Congress in this session. Either make this area a "wilderness" or open it to leasing. Delay and indecision serves no useful purpose.

Continuing a policy of "de facto" wilderness -- whether to placate the organized environmental community or to negotiate an elusive national energy policy -- does not serve the public interest.

The need for immediate Congressional action is clear. The cost of imported oil is surging as imports rise above 50 percent of total United States demand. Recent events in the Persian Gulf have prompted many Americans to wonder why we cannot reach a decision on the Coastal Plain, yet have placed American lives at risk to protect foreign oil sources.

Companies now willing to commit resources and capital in the Coastal Plain need clear guidelines on when these resources can be usefully employed before this capital is allocated on foreign oil projects.

If my people's economic future is to be limited to guiding a few wealthy individuals who can afford to visit the North Slope and the Coastal Plain by helicopter and charter plane, we need to know that as well.

4. Caribou, Subsistence and Oil

Finally, Mr. Chairman, I want to direct a few remarks toward the concerns some of our Athabaskan Indian neighbors in Canada and Central Alaska have expressed about the possible impact of oil development in the Coastal Plain area on the migratory Porcupine Caribou Herd. The Athabaskan's concerns are understandable. They represent a fear about an unfamiliar technology's possible impact on the caribou--an important subsistence resource. My people shared this same concern twenty years ago following the discovery of Prudhoe Bay. But our fears proved unjustified. The Central Arctic herd at Prudhoe Bay has grown from 3,000 animals to 18,000 animals. The caribou is adaptable. I am confident that exploration and development will not adversely impact either the Porcupine Caribou Herd or the Eskimo and Athabaskan groups who rely on this herd for subsistence.

5. S. 341 and 570 -- Needed Modifications

a. Impact Aid for Kaktovik Village

One of the recommendations we made the last time we testified was that appropriate financial assistance be made available to Kaktovik Village to provide essential infrastructure and services. A decision to open the Coastal Plain will bring greatly increased visitor traffic and other pressures on a Village whose people desire to retain their privacy, their culture and their character as a subsistence Eskimo community.

With advance planning and modest financial aid Kaktovik can play a role in meeting legitimate needs of exploration and development. Kaktovik can provide some of the essential services and facilities. We will submit an amendment in the next few days to achieve this objective.

b. Proposed Amendment on KIC's Underselection

Under the provisions of ANCSA and ANILCA, Kaktovik Inupiat Corporation (KIC), the Native Village corporation for the Village of Kaktovik, has a right to receive 92,160 acres of surface estate in the vicinity of the Village of Kaktovik. In accordance with these statutory directives, KIC selected lands that both the Village corporation and the Bureau of Land Management (BLM) thought would be sufficient to fulfill this entitlement. However, because of several Native allotments and submerged lands in the vicinity of the Village, it has now been determined by BLM that KIC cannot fulfill its land entitlement from its existing selections.

Section 22(j)(2) of ANCSA, as amended by section 1410 of ANILCA, provides a mechanism by which BLM may generally address village corporation underselections. However, nothwithstanding the provisions of section 22(j)(2) of ANCSA, as amended, KIC may have difficulty fulfilling its ANCSA entitlement. In legislation enacted by the Congress in 1988, Congress prohibited further conveyances of lands within the Coastal Plain of the Arctic National Wildlife Refuge without prior approval by the Congress. This amendment may be construed to prevent the Secretary from withdrawing and making available for selection by KIC the remainder of its ANCSA entitlement in the vicinity of the Village of Kaktovik. To remedy this problem, ASRC respectfully requests an amendment to S. 341 and S. 570 to clarify the Secretary's authority to convey to KIC lands within the Coastal Plain which may be necessary to complete KIC's ANCSA entitlement. This amendment, which we will be submitting within the next few days, would also ensure that ASRC would receive the subsurface estate beneath the surface estate to be conveyed to KIC in accordance with the terms of the 1983 agreement between ASRC and the United States.

c. Job Training

Although oil development and increased commercialization results in greater employment opportunities for North Slope residents, often the jobs for which these residents are qualified are unskilled and lesser compensated. Programs aimed at upgrading the job skills of the North Slope Inupiat Eskimo and other Native groups are needed to ensure that these groups are able to take economic advantage of and more fully benefit from oil and gas exploration, development and production on the coastal plain. We will be submitting an amendment that would establish a job training program for local residents.

d. Redesignation of ANWR boundaries to exclude private lands

Lands chosen by Kaktovik Village Corporation and ASRC under the provisions of ANCSA are within the boundaries of ANWR. ANWR has been designated a Wildlife Refuge and as such is subject to special federal administration and land use management. Because Village lands and ASRC subsurface lands are within the Refuge, they are also subject to federal administration and management. Federal managment of private lands, however, is inappropriate and administratively confusing. ASRC therefore, respectfully requests that S. 341 and S. 570 be amended to exclude from the boundaries of ANWR Kaktovik Village and private lands owned by the Inupiat people through the Village Corporation and ASRC. We will be submitting an amendment that would redesignate ANWR boundaries to exclude these lands.

6. Major Oil Company Amendment to Take Eskimo Property Rights

In the past, some major oil companies have sought legislatively to prevent ASRC and its lease holders from engaging in exploratory drilling on the subsurface estates owned by ASRC in the Coastal Plain until the first lease sale is held by the Secretary in the Coastal Plain. Our testimony of March 6, 1989, attached as Appendix A, contains a detailed discussion that addresses this issue at pages 14-20. As we made clear in our previous testimony, we continue to oppose any measure that would diminish the legal, constitutional or property rights of the Inupiat Eskimo people without just compensation.

7. Section 7(i) Amendment

ASRC acquired the rights to its 92,160 acres of subsurface estate in ANWR in a 1983 land exchange with the United States. ASRC acquired its subsurface estate by exchanging to the United States over 101,000 acres of prime wilderness surface estate in the heart of the Gates of the Arctic National Park. Because ASRC exchanged only surface estate to the United States in acquiring the Kaktovik subsurface, ASRC has consistently maintained since 1983 that any revenues that it derives from this subsurface estate are not subject to the revenue sharing requirements of section 7(i) of the Alaska Native Claims Settlement Act of 1971 (ANCSA).

Section 7(i) of ANCSA provides that Alaska Native Regional Corporation must share with the other eleven Regional Corporations revenues derived from subsurface or timber resources received pursuant to ANCSA. This provision was the subject of extensive litigation after the enactment of ANCSA. In 1982 the twelve Regional Corporations executed a comprehensive section 7(i) Settlement Agreement. Under this agreement, when a Regional Corporation exchanges only surface estate in a land exchange, the property that the Regional Corporation receives is not subject to the revenue sharing requirements of section 7(i) even if this property consists, in whole or in part, of subsurface estate.

Although some of the Regional Corporation sought in previous Congresses to require ASRC to give nearly 70 percent of the revenues received from Kaktovik subsurface lands to the other eleven Regional Corporations, on March 27, 1989, a three member arbitration panel in Seattle unanimously upheld ASRC's position and found that the revenues that ASRC has and will receive from these lands are exempt from the sharing requirements of section 7(i). Since this matter has now been resolved in the exclusive legal forum all of the corporations agreed upon for resolving section 7(i) disputes, ASRC will oppose any further effort to involve Congress in rewriting the section 7(i) Settlement.

CONCLUSION

Mr. Chairman, my people appreciate the opportunity to present our views. The future of the Coastal Plain is of critical importance to our future and our children's future. We recognize that our interests sometimes get lost in debates involving national energy policy, balance of payments, the budget deficit and other fundamental issues of government policy.

We strongly urge the Committee to open the Coastal Plain to a carefully regulated, environmentally sensitive program of leasing, exploration and development.

APPENDIX A

JACOB ADAMS

PRESIDENT

ARCTIC SLOPE REGIONAL CORPORATION

TESTIMONY
SUBMITTED FOR THE RECORD
ON
THE PROVISIONS OF S. 406
BEFORE
THE SENATE ENERGY AND NATURAL RESOURCES COMMITTEE

March 6, 1989

Mr. Chairman, my name is Jacob Adams. I appreciate this opportunity to submit testimony for the hearing record on S. 406.

I do so in my capacity as President of Arctic Slope Regional Corporation (ASRC). ASRC represents the views and interests of our 3,700 Eskimo shareholders who live in eight remote Villages on Alaska's North Slope.

1. Introduction

The future status of the Coastal Plain of the Arctic National Wildlife Refuge (ANWR) is of critical importance to the nation's long-term economic well-being and to its energy security. The status of the Coastal Plain is also of critical importance to the future well-being of the more than 6,000 Inupiat Eskimo people who are the full-time, year-round residents of Alaska's North Slope.

2. Prior Testimony

Representatives of ASRC testified before this Committee on two occasions in the 100th Congress. I would like to incorporate our prior testimony as Appendices A and B to my statement. ASRC's previous testimony provides important historical background concerning ASRC, our shareholders, the Coastal Plain and our lands at Kaktovik which, in the interest of time, I will not repeat in this statement.

3. ASRC's Interest in the Coastal Plain Decision

The interests of the Inupiut Eskimo people in the Coastal Plain are social, cultural and economic. The pending Congressional decision on the future of the Coastal Plain will determine whether or not my people will have a long-term tax base from which to provide essential and minimal public services. It will also determine whether there will be jobs and economic activity for our young people and our children. Finally, this decision will determine whether we, the people who once held aboriginal title to Prudhoe Bay and all of the North Slope, will be permitted to develop the 92,160 acres of highly prospective private lands that we own at Kaktovik Village.

Let me summarize briefly my people's specific interests in the Coastal Plain.

a. Tax base, public services and local government

Prior to Prudhoe Bay, there was no tax base and no effective means to provide essential public services to the people in our eight remote Villages. In these Villages, sewage service was by "honey pot." Water was hauled by sled from lakes and streams. Our children were sent to BIA schools thousands of miles away. Access to medical care was closed. Fire and police protection were nonexistent. Electrical service was unreliable. Communication with the outside was sporadic. Housing was very poor. The cost of food and essentials was many times that of other areas of the United States.

My people survived by their wits, by barter, by subsistence hunting, and by sharing.

Prudhoe Bay's discovery and subsequent development brought major changes. These changes included, for the first time, a local tax base and an opportunity to establish a local Borough (County) form of government. The "North Slope Borough Government" we established in 1972 has addressed our most important needs for essential public services. For the first time, our Villages are now able to provide our people police, fire, medical and educational services. The Prudhoe Bay industrial tax base made this possible.

b. ASRC and private economic development

Prudhoe Bay's discovery also brought, for the first time, jobs and an opportunity for economic activity to my people. Through ASRC, our regional corporation, and our Village Corporations, my people are part of this activity. We now own small construction, pipeline and oil field service companies which generate profits and provide jobs for our people. Development activities at Prudhoe Bay and other new fields made this possible.

c. Value of our private lands

Finally, Prudhoe Bay's discovery and the construction of the Trans-Alaska Pipeline gave economic value to the mineral estate of our lands and to our land selection rights granted under the Alaska Native Claims Settlement Act. Through lease and business relationships with major energy companies ASRC has generated capital to expand our construction and service companies and to create new jobs.

Unfortunately, the revenue from our lands, to date, has been only from leasing our lands. Thus far, we have no commercial oil or gas production on our land.

d. Uncertain economic future

Obviously, all of these developments have improved my people's quality of life. They have opened new educational, employment and economic opportunities.

But, in major respects, our future is still very uncertain: my people's future is linked to the pending Congressional decision on the Coastal Plain.

If there are no new major discoveries made on the North Slope soon, Prudhoe Bay's production will go into a steep decline throughout the 1990's and will end sometime early in the next century.

In ten to fifteen years, we will see our Borough tax base seriously eroded. This means the minimal services we enjoy today will be cut back.

We will also see job opportunities disappear as North Slope production declines and activities are reduced to a "maintenance" level operation.

Finally, economic opportunities for our Eskimo-owned companies on the North Slope and the economic value of our land will disappear.

That is the future we see if Congress does not open the Nation's best prospect for new "world class" reserves to leasing.

The only bright spot we see is the jobs which will eventually come from dismantling the pipeline and other facilities on the North Slope and shipping them South for scrap iron.

e. Nation's best prospect and need for decision

If, however, Congress decides to open the Coastal Plain to leasing and properly regulated development, we see a much brighter future, for us and for the nation.

No one disputes that the Coastal Plain is the nation's best prospect for major new oil and gas reserves. This does not necessarily mean Prudhoe Bay's discovery will be repeated. It means the potential is there, however, for one or more Prudhoe Bay class reserves.

It also means that continuing the search for needed domestic oil will continue on the North Slope.

And continued exploration is what is necessary. Twenty years after Prudhoe Bay's discovery, what appears to be a major discovery was made a few weeks ago by ARCO and others only a few miles from the Prudhoe Bay reservoir. This shows how little exploration has been done to date, and how much more is needed.

To date, only one exploratory well has been drilled in the Coastal Plain -- our KIC No. 1 well. Yet, the Department of the Interior has identified 26 Prudhoe Bay like structures with four-way closure on the Coastal Plain.

The National Wildlife Federation's "independent" geologist says Interior's projections are too "conservative," because they did not assess reserves in other potential Coastal Plain structures or this area's potential for major new natural gas reserves. The Congressional Office of Technology Assessment concurs in its recent report of last week.

The nation and my people deserve a decision from the Congress in this session. Make this area a "wilderness" or open it to leasing. Delay and indecision serves no useful purpose.

Continuing a policy of "de facto" wilderness -- whether to placate the organized environmental community or to negotiate an elusive national energy policy -- does not serve the public interest.

The need for immediate Congressional action is clear. The cost of imported oil is surging as imports rise to nearly 50 percent of total United States demand.

Companies now willing to commit resources and capital in the Coastal Plain need clear guidelines on when these resources can be usefully employed before this capital is allocated on foreign oil projects.

If my people's economic future is to be limited to guiding a few wealthy individuals who can afford to visit the North Slope and the Coastal Plain by helicopter and charter plane, we need to know that as well.

4. S. 2214 in the 100th Congress

In the last Congress, ASRC generally supported S. 2214 as reported by the Senate Energy Committee on March 24, 1988. This measure contained strict environmental and regulatory standards to regulate exploratory and developmental activities on the Coastal Plain. The bill also provided stringent protection for the fish and wildlife resources of the area, as well as the subsistence uses and needs of the Eskimo people who reside at Kaktovik Village.

S. 2214 established a set of policies for guiding the conduct of permitted activities on the Coastal Plain and delegated implementation of these policies to the Secretary of the Interior, subject to Congressional oversight. As reported, the bill built upon the history of successful North Slope oil exploration and development and the impressive gains in technology and regulation which have been made over the twenty years since Prudhoe Bay's discovery.

S. 2214 required that the substantive standards and environmental stipulations contained in the bill be applied to activities associated with the development of the 92,160 acres of private lands within ANWR owned by the Eskimo shareholders of ASRC and Kaktovik Inupiat Corporation (KIC). This requirement is in keeping with the provisions of the 1983 Land Exchange Agreement under which ASRC acquired the subsurface estate beneath the Village Corporation lands at Kaktovik. Unlike the companion House bill, H.R. 3601, however, the Senate bill did not seek to impose statutory limitations on the use of my people's private lands that would constitute an unlawful "taking" of our private property rights.

ASRC and its shareholders commend the Committee for its thorough consideration of this matter in the past Congress. The extensive hearing record, supplemented by field trips and on-site inspection of the Coastal Plain, laid a thorough foundation for informed judgment and decision-making. My people were pleased that the Committee adopted many of the recommendations and amendments that we advanced in the last Congress for improving S. 2214.

5. S. 406 in the 101st Congress

S. 406, as introduced on February 9, 1989, is virtually identical to S. 2214 except for deletions from the bill made for reasons related to jurisdiction and the "referral" of bills under the Senate Rules. The provisions of S. 2214 deleted from S. 406 are important and have been introduced as amendments to S. 406. In discussing the provisions of S. 406, my statement will address the provisions of these amendments as well.

It is my view that little has changed as a matter of factual and policy considerations since March 24, 1988, when this Committee reported S. 2214. The changes that have occurred, however, are important. They represent trends and events all moving in the same direction. They heighten the urgent need for favorable Congressional action on this legislation.

What are these trends?

a. The nation's domestic crude oil production has continued to decline. This decline will accelerate as Prudhoe Bay production goes into decline. Meanwhile, demand, and oil imports to fill the gap, continue to rise.

b. OPEC is showing new unity. World oil production and prices are being maintained at levels which continue to blunt new conservation efforts and gravely threaten the economic future of many forms of renewable energy and alternative fuels.

c. Those who oppose OCS development continue to expand the areas closed to development.

d. The future of nuclear power continues to appear very uncertain.

e. Today, the nation's future economic well-being is more closely tied than ever before to the use of conventional fuels -- especially crude oil.

The fundamental policy questions for this Committee are, therefore:

- from where will the oil the nation needs now and in the future come?
- how much increased dependence on foreign oil can the nation tolerate? and
- what will the cost of this imported oil be in terms of balance of payments?

The Coastal Plain of ANWR, of course, presents the single most important option available to add major new domestic reserves and production.

This option is available in a time frame which will permit any commercial reserves found in the Coastal Plain to be transported to markets in the lower 48 states. If the Coastal Plain is not opened soon, however, there is an increasing risk that Prudhoe Bay and other reserves will be depleted, and that the Trans-Alaska Pipeline System will eventually be retired and dismantled.

If this happens it is unlikely that Coastal Plain oil could ever be produced. This also means that other small offshore and onshore discoveries on the North Slope may never reach commercial production.

Congress should not enter the decade of the 1990's hiding behind the slogan of: "Drain America Last."

6. S. 406 -- Needed Modifications

a. Impact Aid for Kaktovik Village

One of the recommendations we made last year was that appropriate financial assistance be made available to Kaktovik Village to provide essential infrastructure and services. A decision to open the Coastal Plain will bring greatly increased visitor traffic and other pressures on a Village whose people desire to retain their privacy, their culture and their character as a subsistence Eskimo community.

With advance planning and modest financial aid Kaktovik can play a role in meeting legitimate needs of exploration and development. Kaktovik can provide some of the essential services and facilities. Attached as Appendix C is an amendment to achieve this objective.

b. Proposed Amendment on KIC's Underselection

Under the provisions of ANCSA and ANILCA, Kaktovik Inupiat Corporation (KIC), the Native Village corporation for the Village of Kaktovik, has a right to receive 92,160 acres of surface estate in the vicinity of the Village of Kaktovik. In accordance with these statutory directives, KIC selected lands that both the Village corporation and the Bureau of Land Management (BLM) thought would be sufficient to fulfill this entitlement. However, because of several Native allotments and submerged lands. in the vicinity of the Village, it has now been determined by BLM that KIC cannot fulfill its land entitlement from its existing selections. In fact, BLM estimates that, after the conveyance of all of its pending selections, KIC will still fall approximately 2,400 acres short of fulfilling its 92,160 acre entitlement under ANCSA and ANILCA.

Section 22(j)(2) of ANCSA, as amended by section 1410 of ANILCA, provides a mechanism by which BLM may generally address village corporation underselections. As amended, section 22(j)(2) provides that in cases in which lands selected by a village corporation are insufficient to fulfill the corporation's entitlement under ANCSA, the Secretary is authorized to withdraw twice the amount of the unfulfilled entitlement and provide the village corporation 90 days to select from the withdrawal the lands necessary to fulfill its entitlement. Thus, section 22(j)(2) provides the mechanism by which KIC could expect to fulfill its ANCSA entitlement.

Nothwithstanding the provisions of section 22(j)(2) of ANCSA, as amended, KIC may have difficulty fulfilling its ANCSA entitlement. In legislation enacted by the Congress last year (Public Law 100-395, August 16, 1988 (102 Stat. 979)), the Congress amended the general exchange authority set forth in section 1302(h) of ANILCA. The amendment prohibited further conveyances of lands within the Coastal Plain of the Arctic National Wildlife Refuge without prior approval by the Congress. Although this legislation was intended to prevent new administrative land exchanges in which the United States would convey to private parties lands within the Coastal Plain, this amendment may be construed to prevent the Secretary from withdrawing and making available for selection by KIC the remainder of its ANCSA entitlement in the vicinity of the Village of Kaktovik. To remedy this problem, ASRC respectfully requests an amendment to S. 406 to clarify the Secretary's authority to convey to KIC lands within the Coastal Plain which may be necessary to complete KIC's ANCSA entitlement. This amendment, enclosed with this testimony in Appendix D, would also ensure that ASRC would receive the subsurface estate beneath the surface estate to be conveyed to KIC in accordance with the terms of the 1983 agreement between ASRC and the United States.

In 1980, the Congress affirmed in sections 1431(g) and 1410 of ANILCA the right of KIC to receive its full 92,160 acre entitlement from lands in the vicinity of the Village of Kaktovik. The proposed amendment would reaffirm this right and assure that the Secretary of the Interior has the administrative authority to make available to KIC these lands to fulfill its entitlement.

In the absence of the proposed amendment, the Secretary may not have the necessary administrative authority to allow KIC to fulfill its entitlement in the vicinity of the Village. In that case, the Congressional intent to allow KIC to fulfill its entitlement may be frustrated, as the Secretary proceeds to lease the lands in the Coastal Plain adjacent to the current lands owned by the Village Corporation. The proposed amendment will avoid this conflict and assure to the Eskimo people the ownership of those lands that were promised to them by the Congress in ANCSA and ANILCA.

7. Major Oil Company Amendment to Take Eskimo Property Rights

In recent weeks, several major oil companies have made a major legislative effort in the Senate Energy Committee to secure adoption of an amendment to S. 406 which we believe would be an unlawful taking of the contractual and property rights of ASRC and its shareholders. This amendment would prevent ASRC and its lease holders from engaging in exploratory drilling on the subsurface estate owned by ASRC in the Coastal Plain at the date of enactment of ANWR legislation. Instead, such activity could not occur until the first lease sale is held by the Secretary in the Coastal Plain.

As background, ASRC received the rights to 92,160 acres of subsurface in and adjacent to the Coastal Plain in an August 9, 1983 land exchange with the United States. Approximately 69,000 acres of this subsurface estate is not in the Coastal Plain, and ASRC was free, from the date of the receipt of this land, to engage in exploratory drilling on this land. However, approximately 23,000 acres of ASRC's subsurface estate is within the Coastal Plain as that term was defined in section 1002 of ANILCA. On this 23,000 acre parcel, ASRC agreed to refrain from exploratory drilling until the date of enactment of legislation opening either the Coastal Plain of ANWR or the ASRC lands to oil and gas exploration or development. Once Congress acts to open the Coastal Plain of ANWR to oil and gas exploration or development, ASRC has an unfettered right to engage in exploratory drilling on this 23,000 acres of land (known as "the fourth township"). Enclosed for the information of the Committee as Appendix E is a February 28, 1989 memorandum that describes in more detail ASRC's rights to engage in exploratory drilling on the fourth township.

Several major oil companies have proposed an amendment to preclude ASRC from engaging in exploratory drilling on this fourth township of land until the first lease sale. Two arguments have been advanced by these major oil companies for this amendment.

First, the major oil companies have alleged that, as a matter of environmental protection, ASRC should refrain from exploratory drilling on the fourth township until the promulgation of environmental regulations by the Secretary of the Interior to assure that such exploratory drilling does not occur in a manner harmful to the environment of ANWR. However, this argument fails to recognize that, as a part of the 1983 land exchange agreement between ASRC and the United States, ASRC, its successors, and assigns are bound by an extensive set of very strict environmental land use stipulations to assure that any exploratory drilling by ASRC or its oil company partners within ANWR are conducted in the most environmentally sound manner possible. In addition, the environmental stipulations provide that ASRC will also be bound by the provisions of any additional environmental protections established by the Congress in legislation to open ANWR and by further regulatory restrictions deemed necessary by the Secretary of the Interior. Thus, any drilling conducted by ASRC on either its 69,000 acres adjacent to the Coastal Plain or the fourth township within the Coastal Plain will be conducted in the most environmentally sound manner possible.

The second argument advanced by the proponents of this amendment is that, if ASRC and its partners are permitted to drill an exploratory well on the fourth township prior to the first ANWR lease sale, the United States will receive less revenue as a result of bonus bids in the first lease sale. Once again, there is no basis for this allegation. Indeed, evidence from recent lease sales demonstrates just the opposite conclusion.

In many instances in which the Federal government leases Federal lands, both onshore and offshore, adjacent lands have previously been leased or are in private ownership. Often, exploration wells have been drilled on these lands adjacent to unleased Federal acreage. History demonstrates that when a Federal lease sale is held on acreage adjacent to an area that has been drilled by an oil company or a group of oil companies, speculative interest is heightened and Federal revenues are enhanced.

Indeed, logic dictates this result. If an exploratory well is drilled on acreage adjacent to the Federal acreage to be leased and oil is discovered, it may be anticipated that the companies with such information will bid more than other companies without such information. On the other hand, if a well is drilled and no oil is discovered, companies with this information may be expected to refrain from bidding on adjacent tracts, but companies without such information may be expected to bid an equivalent amount to what they would have bid in the absence of the drilling of this exploratory well. Thus, the drilling of a well on adjacent property prior to a lease sale is unlikely to reduce Federal revenues, but may substantially enhance the revenues that the Federal government may receive in such a lease sale.

As we have tried to discuss this matter with the members of this Committee and their staffs, we have recognized that a small group of North Slope Eskimos in Barrow, Alaska, cannot have near the lobbying impact of twenty of the nation's largest oil companies, operating in a coordinated manner on what is viewed by most Members of Congress as a "minor" legislative amendment. For us, the amendment is not minor; it is, instead, our children's future; our best hope to participate in the economic benefits of our privately owned land and resources.

We respectfully request, therefore, that each of the proponents of the Taking Amendment be asked to respond, on the public record, to one question. The question is this: "If the legislative language we Eskimos call the "Taking Amendment" (referred to in the House Merchant Marine Committee as the "Weldon Amendment") is good public policy and good energy policy for our private lands in the small Coastal Plain of Alaska, why shouldn't this policy be enlarged and made national policy for all lease sales on the Outer Continental Shelf and the onshore public lands of the United States?"

I am enclosing as Appendix F a more detailed explanation of this concept. If the oil companies that now ardently advocate the adoption of the Taking Amendment cannot support the amendment as national law applicable to all Federal lease sales, then I believe that there is obviously something fundamentally wrong and unfair about the amendment.

It should also be fully recognized that in 1984 ASRC invited the 19 major oil companies active on the North Slope of Alaska to present bids or offers for leases on our Kaktovik lands. Six offers were received from different combinations of these companies. ASRC ultimately selected the high bid offer of Chevron and BP. The point of this history is that this is a very competitive industry. The companies now pushing the Taking Amendment had every opportunity in 1984 to acquire leasehold interests in our Kaktovik property. To reward their failure to be competitive and take risks at this late date is contrary to the competitive ethic, to free enterprise and to the historic traditions of the oil industry.

We believe that the proposed amendment is bad public policy and would result in an unfair taking of our private property rights. It has been suggested that this amendment will ensure a "level playing field" for all participants in the first lease sale in ANWR. At the same time, several of the proponents of this amendment are participating in exploratory wells in the Federal and State offshore areas directly adjacent to the Coastal

Plain of ANWR and the ASRC lands. By preventing ASRC and its partners from engaging in exploratory drilling on ASRC's private lands while engaging in exactly these activities on adjacent offshore leases, these companies are in fact heavily tilting the playing field in their favor. In addition, these companies are ensuring that they need bid the least amount of dollars possible in the first ANWR lease sale, thus reducing rather than increasing the anticipated revenues that the United States may expect as a result of the action to open ANWR to oil and gas leasing.

8. Section 7(i) Amendment

ASRC acquired the rights to its 92,160 acres of subsurface estate in ANWR in a 1983 land exchange with the United States. ASRC acquired its subsurface estate by exchanging to the United States over 101,000 acres of prime wilderness surface estate in the heart of the Gates of the Arctic National Park. Because ASRC exchanged only surface estate to the United States in acquiring the Kaktovik subsurface, ASRC has consistently maintained since 1983 that any revenues that it derives from this subsurface estate are not subject to the revenue sharing requirements of section 7(i) of the Alaska Native Claims Settlement Act of 1971 (ANCSA).

Section 7(i) of ANCSA provides that Alaska Native Regional Corporation must share with the other eleven Regional Corporations revenues derived from subsurface or timber resources received pursuant to ANCSA. Following its passage as a part of the Native land claims settlement enacted by Congress in 1971, this provision engendered ten years of divisive litigation among the twelve Regional Corporations in an attempt to define the parameters of this seemingly straightforward concept.

In 1982, the twelve Regional Corporations finally agreed on a 120-page "Section 7(i) Settlement Agreement." This Settlement Agreement sets forth detailed ground rules for applying the broad dictates of section 7(i) to specific factual situations. It also establishes binding arbitration as the exclusive mechanism for settling disputes arising under section 7(i) on the Settlement Agreement.

The Settlement Agreement also establishes specific rules with respect to land exchanges. One of these rules, on which ASRC relied in executing the 1983 land exchange, provides that, when a Regional Corporation exchanges only surface estate in a land exchange, the property that the Regional Corporation receives is not subject to the revenue sharing requirements of section 7(i) even if this property consists, in whole or in part, of subsurface estate.

Having parted with our most valuable surface estate (land that was actively sought for public ownership by the National Park Service for many years) to acquire the Kaktovik subsurface estate, we now believe that the revenues that ASRC has and will receive from this subsurface estate are exempt from the sharing requirements of section 7(i) of ANCSA as interpreted by the Settlement Agreement agreed to by all twelve Regional Corporations in 1982. ASRC believes that the law on this matter is clear and that Congressional intervention is this inter-Regional Corporation dispute is unnecessary and inappropriate as a matter of policy and improper as a matter of law.

It is our understanding that representatives of six Alaska Native Regional Corporations have been engaged in a lobbying effort seeking Congressional action on an amendment that would threaten my people's economic future. This amendment would prevent development of our lands at Kaktovik unless ASRC agrees to give nearly 70 percent of the revenues received from these lands to the eleven other Regional Corporations in Alaska. This amendment is proposed for addition to S. 406. The proposed amendment, if adopted, would require ASRC's Eskimo shareholders:

1) to agree to give nearly 70 percent of the economic value of our most valuable asset -- our 92,160 acres of private lands in the Coastal Plain and in ANWR -- to the eleven other regional corporations; or

2) if ASRC's shareholders do not agree to make this gift, the amendment would forever deny my people the opportunity to develop their private lands at Kaktovik in violation of ASRC's 1983 land exchange contract with the United States Government.

The proponents of this amendment allege that what they are asking for is required by section 7(i) of ANCSA and the 1982 Settlement Agreement among all twelve Regional Corporations. Yet, they have totally disregarded the dispute resolution machinery that all of the Corporations agreed to when we signed that contract. In fact, the very arguments that they are making to Members of Congress are simultaneously being made by three of the proponents of the amendment to an arbitration panel in Seattle. The parties have expended literally millions of dollars over the last three years to answer the legal questions that the proponents now ask you to assume away. Final arguments in the artibration were held on February 28, 1989. A final decision is expected from the arbitration panel within thirty to sixty days. If the claimants in that arbitration prevail, the legal questions that the proponents have raised will be answered in their favor and Congressional intervention will be unnecessary. If they fail, ASRC will have established its rights under the 1982 contract among the Regional Corporations -- rights that cannot be taken away from ASRC without just compensation.

The advocates of this amendment have apparently concluded that the case they have presented in the arbitration proceedings lacks merit and has little chance of success. They are, therefore, now asking Congress to legislate a result that they now believe they cannot achieve in the exclusive legal forum all of the corporations agreed upon in 1982 for resolving section 7(i) issues and claims.

The amendment proposed by these six Regional Corporations is unprecedented. If enacted, it would constitute a legislative taking of nearly 70 percent of my people's Kaktovik property. If enacted, it would also expose the United States government to very substantial liability for an unconstitutional taking of the North Slope Eskimos' single most valuable property right.

On behalf of the Inupiat Eskimo people, I respectfully request that the Senate Energy Committee permit the arbitration panel to proceed to a judgment, based on the facts and the law as presented in the record of the proceedings, without legislative interference.

CONCLUSION

Mr. Chairman, my people appreciate the opportunity to present our views. The future of the Coastal Plain is of critical importance to our future and our children's future. We recognize that our interests sometimes get lost in debates involving national energy policy, balance of payments, the budget deficit and other fundamental issues of government policy.

We strongly urge the Committee to open the Coastal Plain to a carefully regulated, environmentally sensitive program of leasing, exploration and development.

APPENDIX B

February 4, 1991

FACT SHEET

ARCTIC NATIONAL WILDLIFE REFUGE

Recoverable Oil Resource Update

In 1987, the Secretary of the Interior provided Congress with an analysis of the oil resources beneath the 1.5 million acre coastal plain of the 19 million acre Arctic National Wildlife Refuge (ANWR). Congress requested the assessment of the coastal plain's oil resource potential in section 1002 of the Alaska National Interest Lands Conservation Act of 1980.

The Secretary reported that the coastal plain is the most outstanding petroleum exploration target remaining in the onshore United States. The estimated volume of recoverable oil in the coastal plain ranged from 600 million to 9.2 billion barrels, with a mean of 3.2 billion barrels. The marginal probability of discovering economically recoverable oil was estimated to be 19 percent, and the minimum size of economic oil fields was estimated to be 440 million barrels.

Based on available projections of U.S. oil demand, domestic production, and imports, the Secretary estimated that at its peak, the production of 3.2 billion barrels of oil from the coastal plain would provide 8 percent of U.S. domestic oil production, 4 percent of total U.S. demand, and reduce imports by nearly 9 percent. In addition, this production would provide net national economic benefits of $79.4 billion, including Federal revenues of $38 billion.

The Secretary estimated that exploration and development of 3.2 billion barrels of oil would directly affect only 12,650 acres or 0.8 percent of the coastal plain. This is equivalent to affecting an area the size of Washington D.C.'s Dulles Airport in an area the size of the State of Delaware.

In May, 1990, the Department of the Interior's Assistant Secretary - Land and Minerals Management asked the Bureau of Land Management (BLM) to review geological and geophysical data developed after the 1987 assessment and to determine if that new information changed the Bureau's estimate of recoverable oil resources in the coastal plain. If its estimate changed as a result of new information, it was asked to determine the economic consequences of leasing the oil resources for exploration and development.

The BLM initiated its reassessment in June 1990. New information used in the reassessment included geological data from four wells drilled near the coastal plain, 800 line miles of reprocessed geophysical data collected from the coastal plain, and some additional seismic data from offshore areas near the coastal plain.

In February, 1991, BLM notified the Assistant Secretary that it had completed its reassessment of the new information and had drawn the following conclusions on economically recoveral oil beneath the coastal plain.

1. The marginal probability of economic success (i.e. the potential for oil recovery) increased from 19 percent in the 1987 assessment to 46 percent.

2. The mean resource estimate of economically recoverable oil in the coastal plain increased from 3.23 to 3.57 billion barrels.

3. The minimum economic field size (MES) decreased from 440 to 400 million barrels of oil.

These conclusions are currently being reviewed within the Department of the Interior.

The BLM is continuing its reassessment of the economics of developing the oil resources of the coastal plain. That reassessment is based in part on information recently published by the Department of Energy. The BLM has not completed this portion of the reassessment. This portion of the Reassessment is scheduled to be completed by April 1, 1991.

Based upon BLM's reassessment, the Department believes that the resource estimates contained in the 1987 report to Congress are accurate. The coastal plain of ANWR is viewed to be an integral part of the North Slope oil province which includes Prudhoe Bay and Canadian discoveries in the MacKenzie River Delta. The potential for the discovery of commercially producible oil in the coastal plain is extremely high.

Steinbeck

ALASKA

in the Twenty-First Century

Alaska in the Twenty-First Century

February 1991

Alaska Center for the Environment
Alaska Coalition
American Rivers
Defenders of Wildlife
Environmental Defense Fund
Friends of the Earth
Izaak Walton League
National Audubon Society
National Parks and Conservation Association
National Wildlife Federation
Natural Resources Defense Council
Northern Alaska Environmental Center
Sierra Club
Southeast Alaska Conservation Council
The Garden Club of America
The Wilderness Society
Trustees for Alaska

Alaska in the Twenty-First Century

February 1991

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Introduction

In the ten years since President Jimmy Carter signed into law the Alaska National Interest Lands Conservation Act, Americans have become more appreciative of its importance and its magnitude. With more than 100 million acres of lands designated as national parks, refuges and other conservation units—an area the size of California—ANILCA stands as the most comprehensive and far reaching land conservation law ever enacted by any country.

But the Alaska Lands Act was not just a victory for land, waters, and wildlife, it was a triumph for the cooperative efforts of the environmental community, under the leadership of the Alaska Coalition, its friends and allies throughout the nation. We celebrate Wild Alaska as a milestone in conservation history, a spirit and organization to be revitalized and directed into our future efforts.

As in any product of legislative struggle and compromise, however, ANILCA contains weakness, loopholes, and unanticipated problems.

One major shortcoming, ANILCA's legislative direction to overdevelop the Tongass National Forest, was reversed after ten years of effort by environmentalists. Congress passed the Tongass Timber Reform Act protecting new wilderness and watershed areas and ending automatic funding for logging. President George Bush signed the new law on November 28, 1990.

But a major battle remains: the controversy over protection of the coastal plain of the Arctic National Wildlife Refuge. Against the backdrop of crisis in the oil-rich sands of the Middle East, Congress again debates destruction of the coastal plain as a result of failed energy policies. To protect this wild treasure, environmental activists must lead the way toward alternatives to increased oil reliance, such as improved energy efficiency and a move to renewable energy resources.

Ironically, while the drums of war in the Persian Gulf threaten the wildlife and wilderness of the Arctic Refuge, the dawning of peace between East and West in 1990 underscores the importance of Alaska's natural treasures within the circumpolar environment and the opportunities for better understanding and international cooperation in protecting our common heritage.

Viewing Alaska's place in the global environment of the 1990's with its heightened environmental awareness, better understanding of the transcontinental consequences of pollution on nature and humanity, and new opportunities for international cooperation, we must ask anew the three basic questions that governed the structure of the original Alaska conservation proposals:

> *Have we protected all of the diverse ecosystems of Alaska?* Are there important lands, rivers and marine environments which

> should be protected as new conservation system units? What are the needs and opportunities for new wilderness areas?
>
> *Have we protected complete ecosystems?* Is the biodiversity of each ecosystem conservation units protected? How can we protect conservation system units from incompatible activities taking place on inholdings?
>
> *Are the conservation system units being managed properly?* How have our existing laws been implemented? What conflicts exist with extractive uses of our natural resources, with wildlife management, and between state and federal goals?

And to this list, we must consider Alaskan energy development and transportation as a separate major issue, one that affects management of every conservation system unit, lands and waters outside the conservation systems, even international conservation efforts. Energy development policies dominate Alaskan politics, the Alaskan economy and Alaskan natural resources. What are the threats from oil and gas extraction, maritime oil transport, a new gas pipeline?

This conference and this document gathers our best information and expertise from the environmental community and from the resource agencies, scientists, economic interests, the Native community, and the efforts of neighbors such as Canada and the Soviet Union. To this we add the interests, experience and skills of environmental leaders throughout the nation to examine Alaska in the 1990's, not only our immediate challenge to protect the Arctic Refuge, as important as that is, but our common opportunity to protect America's wildest areas, to work within an environmentally sustainable economy, to identify those values of international importance, and to cooperate with our neighbors in better understanding and management of our shared heritage.

The Triumph of the Alaska Lands Act—10 Years Later

The Alaska Lands Act—formally the Alaska National Interest Lands Conservation Act of 1980, or ANILCA—was hailed by conservationists as "the Land and Wildlife Conservation Vote of the Century." No other measure has ever protected so much wild land or wildlife, no environmental initiative had ever involved such a massive outpouring of support from throughout the nation, nor had there ever been such an expensive, complex legislative battle undertaken by the united environmental community.

ANILCA protected 104 million acres of new national parks, monuments, refuges, forests, rivers and conservation areas—an area the size of California, overlain with 55 million acres of wilderness—a total so vast that it tripled the protected lands in the National Wilderness Protection System.

In addition, Congress provided the security of statutory designation to 27.6 million acres of refuges and monuments created by executive order prior to the Act. Included in this category the former Katmai and Glacier Bay national monuments (now parks), and the former Arctic National Wildlife Range (now refuge).

But while Alaska's wilderness is magnificent, the Alaska Lands Act is but a starting point.

The imperfections in the Alaska Lands Act, its subsequent implementation, and even outside events like the current crisis in the Middle East, have again brought the protection or exploitation of Alaska's unique wild lands to the forefront of America's attention. For the past four years America has debated the same issue that dominated debate ten years ago: the fate of the coastal plain of the Arctic National Wildlife Refuge.

Our Immediate Challenge—the Arctic National Wildlife Refuge

Located in the northeastern corner of Alaska, the Arctic Refuge is the only extensive arctic and subarctic ecosystem in the world that remains protected today. Its core first protected in 1960 by President Eisenhower, it is joined today by the contiguous Northern Yukon National Park in Canada. International conservation bodies recognize it as the world's greatest wild arctic ecosystem. The Refuge provides important habitat for a wide array of wildlife, including polar bears and caribou. The coastal plain is the heart of wildlife activity, the most productive habitat in the ecosystem, and the birthplace for an internationally significant caribou herd still hunted for subsistence by the Gwich'in and Inuit people of Alaska, the Yukon and Canada's Northwest Territories.

Twice, in 1978 and 1979, during a period of energy shortages and international turmoil, the House of Representatives passed an Alaska Lands bill which afforded wilderness protection for the incomparable coastal plain of the Arctic National Wildlife Refuge. The Senate did not agree. Instead, the 1980 law directed the Fish and Wildlife Service to study the 1.5-million-acre coastal plain of the Refuge for its oil and gas potential and its wilderness values.

The provisions of ANILCA protect the refuge from development unless Congress passes new legislation authorizing oil and gas leasing. However, in 1987, the Reagan administrations completed a report recommending that Congress enact full scale oil and gas leasing of the entire coastal plain. The report overlooked major impacts of oil development, overstated the area's potential oil and gas reserves and virtually ignored the region's wilderness values. Although the report has been challenged in court, its findings have been endorsed and repeated by the Bush Administration.

Controversial as the Bush Administration's development proposal is, the oil industry made gains by lobbying committees favorable to their interests which reported development legislation in 1988 and 1989. None of the bills came to the floor of either chamber because of strong opposition from other committees and the wave of public reaction to the devastation caused by the *Exxon Valdez* disaster in the spring of 1989. Nevertheless, by the fall of 1990, the controversy was once again being debated against the backdrop of crisis in the Middle East and a threatened oil supply. The oil industry has already begun a new lobbying initiative where Alaska oil development is equated with loyalty to American troops in the Persian Gulf.

Although access to the coastal plain has long been coveted by the oil and gas industry, the actual impact of the Alaska Lands Act and other public land laws was to make available for development over 90% of Alaska's suspected oil reserves. In fact, the Arctic Refuge coastal plain represents the only 125 miles out of Alaska's 1100 mile long Arctic Ocean coastline—on shore and off shore—which is not open to development. Even the waters directly offshore from the refuge have been leased by the State of Alaska.

If the Arctic Refuge coastal plain is made available to development as well, the Fish and Wildlife Service, using overly optimistic assumptions, estimates only a one-in-five chance that oil could be found in commercial quantities, and only a one in one hundred probability of a giant field on the scale of Prudhoe Bay. Such odds may be appealing to the highly competitive multinational oil firms which fight to gain access to any remaining frontier areas, but they would not assure domestic energy security for the United States even if the Refuge had no competing natural values of any kind.

But the refuge has great environmental value. Leasing legislation would turn the very heart of the refuge to private oil interests to explore and develop. Exploration means the immediate destruction of the wilderness core. The network of roads, pipelines, airfields, drilling pads, housing and other infrastructure which would accompany oil extraction would turn the area into an industrial zone.

Oil Dependence and the Environment

Just as the Mideast crisis underscores U.S. dependence on oil, the tragic oil spill in Prince William Sound demonstrated that oil and pristine environment do not mix. The *Exxon Valdez* dumped 11 million gallons of crude oil into the Sound, washing up on more than 700 miles of coastline. More than 11,000 dead birds were recovered, more than 600 otters. The massive destruction of wildlife affected national parks, forests and wildlife refuges and once again debunked the industry-perpetuated myth that beautiful natural environments can be "developed in an environmentally sound manner."

The *Valdez* was only one of 10,000 spills that dumped 20 million gallons of oil onto our nation's land, water and wildlife in 1989. That devastation continues each year, whether from pipelines, tankers, operator error or any of the other countless "accidents" that occur. And these spills are in addition to the irreversible damage that occurs to an environment by the construction and maintenance of the gigantic industrial infrastructure necessary for the exploration, extraction, and transportation of oil.

Despite the reality of U.S. oil dependency, and the destruction inherent in oil extraction, the oil industry continues to argue that the U.S. somehow can be more independent and nationally "secure" if we drill our beautiful wild areas. But the facts prove the contrary:

1. The geological formations which underlay American lands and waters contain only 4% of the world's oil reserves. The U.S. could not achieve "independence" from foreign oil by developing all of it. The nation will *always* be dependent on foreign oil unless alternative energy policies are researched, developed and receive the full backing of our nation's political leadership.

2. Oil prices will never be influenced by the tiny percentage of oil that may be found in the Arctic National Wildlife Refuge or other pristine places. Even accelerated production of reserves in Prudhoe Bay, the nation's largest, did not dampen domestic prices in the fall of 1990. The price of oil, like any other world commodity, will be dictated by world market pressures, including on the demand for oil by the U.S. and other industrialized nation's, and particularly by those circumstances that affect the major reserve holders.

3. If every drop of oil which the most optimistic oil company forecast from the Refuge were today in the pipeline, the price of oil would still rise on fears of Persian Gulf instability, and the American driver would still pay pump prices that reflect the world market cost of oil plus a profit for the industry. That oil could be used up and American lives will again be risked to protect those foreign sources on which we now depend.

4. The only way to achieve independence from world oil market price swings is to reduce U.S. dependence on all oil, whether domestically produced or imported. And the only way the independence can be achieved is through a national commitment to a new energy policy that charts a steady progression away from an oil dependent economy perpetuated by oil industry political efforts.

A New Energy Policy

The environmental community points to the savings of energy possible through increased conservation, energy efficiency, and the development of alternative fuels, solutions to an energy crisis which are both more substantial and more certain than additional drilling. Such measures could lead to more energy security and spare the wilderness from panic or an outmoded energy policy.

We believe that a strong credible energy strategy must achieve clean American energy by the year 2010. Energy use must be far more efficient than today's, with energy supplies based to a much greater degree on renewable, non-polluting, home-grown sources, and with significantly less reliance on carbon-based fuels.

In order to achieve this goal, the strategy must include critical new commitments and objectives such as:

1. Clear goals for making our energy economy more lean and mean by increasing our energy efficiency at an annual rate of at least 3% and for doubling the portion of our energy use that is derived from renewable sources of energy by the turn of the century. If we achieve these goals, we will also significantly reduce our emissions of carbon dioxide, the chief cause of global warming.

2. A national commitment to double the fuel economy of our light vehicle fleet by the turn of the century. This single step would significantly reduce our vulnerability to oil price and supply disruptions, and also contribute greatly to reducing CO2 emissions and urban pollution.

3. A commitment to stabilize national electricity demand within five years. This will require aggressive Federal leadership in encouraging Least Cost Utility Planning, and should include the adoption of the least cost principle in the Federal energy strategy itself.

4. A new commitment to Federal investment in research and development of energy efficiency and renewable resources. The fraction of Federal R&D devoted to these portions of the energy budget should be doubled within three years.

5. A commitment to cut energy use in buildings by at least 25% per unit of floor area by the year 2000. Any comprehensive energy strategy must focus on increasing the competitiveness of America's industrial sectors—particularly the steel and automobile industries—by vastly improving efficiency. Further, the Administration must lead the nation to increase, as other industrial nations are, the "supply-side". Alternative and/or

more efficient generating technologies can and should be combined with practices such as co-generation, district heating and cooling.

These objectives and commitments will help make a "National Energy Strategy" more than another paper exercise. But there are also paths that must be avoided—failed policies of the past, based on parochial industrial interests, and myths concerning our real energy situation. An energy strategy that is built on the wish lists of various energy industries, on subsidies for the production of fossil fuels, on the despoliation of environmentally fragile lands, or on the resuscitation of the dying U.S. nuclear industry will not work.

During the last decade, the U.S. enjoyed the benefits of low energy prices and plentiful supplies, and national energy policy planning was put on the back burner. Even though earlier federal leadership in energy efficiency was in part responsible for OPEC's disarray, we allowed our efficiency efforts to lapse, and, in the second half of the eighties, we even lost ground.

By putting in place a far-sighted energy strategy now, the U.S. could reclaim this lost ground, and lead the world in the direction of a truly sustainable energy economy—one that is more secure, cleaner, and less environmentally damaging. This opportunity will be lost if President Bush and the Congress choose to champion an *oil industry economic security policy*, rather than a *national energy security policy*, or if our leaders ignore the clear need to begin moving the nation from the era of fossil fuels to the age of efficient, renewable energy.

Our Future Opportunities

The fate of the Arctic Refuge is our most immediate challenge and is the single highest priority for the protection of Alaska's globally significant lands and waters. But its importance should not eclipse the other opportunities that await the international environmental community. By protecting the lands, waters, fish and wildlife of Alaska and working with peoples of other nations to provide for international cooperation in research, management and protection of the circumpolar biosphere we must examine anew the issues of Alaska, in the circumpolar hemisphere, in the twenty-first century.

To protect the diversity of Alaska

1. New National Wildlife Refuges

During the four years of Congressional consideration of ANILCA, several noteworthy wildlife habitats were proposed as refuges but were not included in the final product. Nonetheless, they contain nationally significant fish, wildlife, and habitat values that qualify for units of the National Wildlife Refuge System. The following annotated list provides a glimpse at the areas and their values:

> *Utokok:* This 6.4 million acre area encompasses the primary calving grounds of the 232,000+ head Western Arctic Caribou Herd, and one of the greatest wildlife concentrations in the arctic. The area includes the Lisburne Hills, and the upper reaches of the Kukpuk River. Lying north of the Noatak National Preserve, it includes many migration corridors of the caribou as well as the calving grounds, and is home to abundant grizzly bear, wolverine, hare, wolves, and offers excellent potential muskox habitat amid a spectacular geological landscape. Much of this extraordinary wildlife area is owned by native corporations, but may be acquired through easement or purchase. The Utokok River, significant for floating, hiking and wildlife viewing, scenic quality, and its archaeological and cultural resources, as well as research opportunities, has been proposed for addition to the Wild and Scenic River System.
>
> *Teshekpuk Lake:* This 1.4 million acre area may be the most biologically diverse and productive ecosystem in all of Alaska still lacking meaningful protection. The area is home to the Calving grounds and year round range of the Teshekpuk Lake Caribou Herd and provides critical habitat for globally signif-

cant concentrations of waterfowl. DOI states that the area "supports the most productive, diverse, and sensitive wetland ecosystems in Arctic Alaska." BLM "Special Area" status has not proven adequate to protect these resources from development. In 1982, the Department of Interior authorized exchange of 5000 critical acres to petroleum development interests.

Colville River: Encompassing the river bottoms and adjacent cliffs from Nuka river to Ocean Point, contains prime nesting habitat and vital local food gathering zones for endangered peregrine falcon and other raptors and important moose habitat. In addition to important archaeological resources, the area offers excellent primitive recreation opportunities. The 2.75 million acre area should be include wilderness and wild river designations.

Icy Cape-Kasegeluk Lagoon: The part of the Chukchi sea coast between Wainwright and Icy Cape contains a portion of one of the arctic's best barrier islands/lagoon environments. The lagoons are an extraordinary concentration point along the migratory corridor for many arctic nesting birds as well as summer visitors. Numerous waterfowl, including eiders and scoters, geese and several species important to the North American Waterfowl Management Plan utilize this area. Adjacent wetlands and uplands provide some of the best nesting territory on the North Slope. Lagoons are also visited by marine mammals, including the endangered bowhead whale. Barrier islands protect these lagoons and provide habitat for other species. Barrier islands, lagoons, and associated uplands should be placed in a refuge of about 5.5 million acres.

Afognak Island: Kodiak bears, bald eagles, murrelets, elk and numerous other wildland species along with several salmon species and other anadromous fish find these island habitats vital to their existence. Presently owned by a joint venture of native corporations, these lands could be available for purchase under the Land and Water Conservation Fund as willing seller purchases. Approximately 200,000 acres on this one-half million acre island in refuge status would assure continuation of nationally significant populations of wildlife and fish species.

Copper River Delta: Among the most significant migratory bird habitats on the North American continent, this area has experienced spring and fall flights totalling over 14 million shorebirds in the past. Trumpeter swans, dusky Canada geese, grizzlies, sandpipers and numerous others are dependant on the health of this wilderness river delta. A total of about 1.2 million acres should be placed under refuge status. Although currently administered as part of the Chugach National Forest, this vital migratory bird and other fish and wildlife habitat should be managed as part of our national wildlife refuge system to assure that wildlife receive top management priority.

Seabird Islands of Southeast Alaska: Although included as part of the sweeping Tongass National Forest withdrawal early in the century, there are about eighty five small, mostly treeless (or without commercial timber value) islands and islets that serve as nesting areas and nursery habitats for seabirds. To provide the priority as well as consistency of management for these significant wildlife values. these islands should be placed into the Alaska Maritime National Wildlife Refuge where most of the offshore wildlife habitats of significance were placed in the original ANILCA. The acreage would be small, probably not exceeding 100,000 acres.

Iliamna Lake: Enmeshed in controversy during the ANILCA debates, this outstanding fisheries resource area was left to be designated as a state wildlife management area. That designation has not occurred and the resources of such great importance—the fish and wildlife of the area—do not receive the priority consideration they deserve and require. The refuge could encompass up to four million acres.

Your Creek Additions to the Arctic National Wildlife Refuge: Removed at the insistence of the Alaska congressional delegation during the ANILCA debate. this area represents the only remaining public land habitat for the Porcupine caribou herd that is not in the refuge. An area of about 500,000 acres. this land on the south side of the Brooks Range serves as wintering habitat on a periodic but recurring basis for 10,000 caribou.

2. New National Parks

National parks and monuments should be expanded from existing national preserves, refuges, and forests where appropriate. This is especially true in the case of national preserves, many of which adjoin parks. (Preserves are managed in the same manner as national parks except that sport hunting and trapping are permitted preserves.)

In several of the existing park/preserve complexes, the boundaries separating the park and preserve components differ from the original proposals by the Alaska Coalition. Gates of the Arctic National Park and Preserve includes two preserve components, both originally proposed—and accepted by the House—as park areas. Another example is Wrangell-St. Elias National Park and Preserve, where most of the important fish and wildlife habitat is in preserve status.

[Opponents of preservation did not consider the present park/preserve lines as permanent, as shown by the unsuccessful 1983 Stevens-Murkowski bill to convert half of the new parks—and fully two-thirds of the best wildlife habitat—to national preserves.]

3. Wilderness Review and Designation

Under ANILCA, Congress designated 56 million acres of wilderness in the new and pre-existing units, mostly in the parks and refuges (32 million acres), including millions of acres of marginal habitat in ice fields, glaciers and alpine areas.

As more refuge and park acreage remained non-wilderness than was designated wilderness, Congress directed the Interior Department to study these remaining areas for suitability as wilderness, and asked the President to submit his recommendations no later than December 1987. Congress has yet to receive the White House's proposals. Indeed, the President has yet to even receive recommendations from the Secretary of Interior.

But procrastination is far less a problem than the departmental policies under which these reviews and recommendations have been conducted. In 1981, Secretary Watt issued a memorandum to stop wilderness reviews on BLM lands in Alaska. Three years later the assistant Interior secretary for parks and refuges ordered restricting the size of wilderness recommendations to be made by the National Park Service. In 198[illegible], the director of the Fish and Wildlife Service issued a directive limiting the acreage to be considered for wilderness. In 1988, Representative George Miller, chairman of the House subcommittee responsible for Alaska lands, held oversight hearings on these actions and requested an audit of the Departments recommendations by the General

Accounting Office. The GAO responded with a report that showed that the Fish and Wildlife Service repeatedly undercut local FWS planners and managers in its wilderness recommendations.

In all, 77 million acres of wild new parks and refuges were studied as potential wilderness, but only 8 million acres were recommended in internal Interior Department documents. And even those recommendations have still not been formally submitted by the President to Congress.

The opportunity remains to investigate the process, revise the recommendations, and for Congress to consider recommendations from conservation groups for potential wilderness in Alaska.

All told, there is an enormous opportunity to designate at least an additional 100 million acres of wilderness in Alaska. Leaving aside the recent Tongass National Forest legislation, the remaining federal lands yield a potential as follows:

Federal Agency	Alaska Acres	Existing "W"	Reviewed for "W"	Qualifies for "W"	Admin "W" Recommend
NPS	54.7	33.0	19.0	16.0	4.7
USFWS	77.1	18.7	58.0	51.8	3.4
Chugach NF	6.0	-0-	N/A	2.2 Est	-0-
BLM	80.0	-0-	N/A	50.0 Est	-0-
Totals	217.8	51.7	77.0	120.0	8.1

It is imperative to protect the quality of these lands that qualify for Wilderness until such time as their designation can be accomplished—a political challenge of great significance. The vision is contained in ANILCA: all that is required is the right moment in time and political opportunity to realize this potential.

State of Alaska
National Parks Wilderness Proposals

February 1991

National Park	Total Acreage	Existing Designated Wilderness	NPS Qualifies As Wilderness	USDI Proposed Wilderness
Aniakchak	602,779	0	451,916	283,736
Bering Land Bridge	2,784,960	0	2,354,690	299,520
Cape Krusenstern	659,807	0	467,200	0
Denali	6,028,091	2,124,783	3,560,538	1,421,295
Gates of the Arctic	8,472,517	7,167,192	948,629	0
Glacier Bay	3,283,168	2,664,840	27,170*	-9,720*
Katmai	4,124,075	3,384,358	554,539	163,840
Kenai Fjords	669,541	0	652,465	466,445
Kobuk Valley	1,750,421	174,545	1,553,603	400,000
Lake Clark	4,045,300	2,619,550	827,350	0
Noatak	6,574,481	5,765,427	757,175	467,175
Wrangell-St. Elias	13,188,024	9,078,675	1,559,080	107,040
Yukon-Charley	2,523,509	0	2,220,576	1,087,000
TOTALS	54,706,673	32,979,370	16,007,394	4,686,331
Per Cent	100%	60.3%	29.3%	8.6%

* Includes some wilderness deletions and additions

Status of Alaska National Wildlife Refuge Wilderness Proposals
February 1991

National Wildlife Refuge	Total Acres	Existing Designated Wilderness	USFWS Qualifies As Wilderness	USDI Proposed Wilderness
Refuges with Wilderness Proposals				
Kodiak	1,865,000	0	1,589,000	1,170,000
Togiak	4,105,000	2,270,000	1,445,000	334,000
Yukon Flats	8,630,000	0	8,480,000	650,000
AK Maritime	3,557,030	2,576,320	324,000	109,648
Kenai	1,970,000	1,350,000	380,000	172,320
AK Peninsula	3,500,000	0	3,360,000	640,000
Becharof	1,200,000	400,000	606,000	347,000
Refuges without Wilderness Proposals				
Izembek	320,893	300,000	0	0
Innoko	3,850,000	1,240,000	2,610,000	0
Kanuti	1,430,000	0	1,280,000	0
Koyukuk	3,550,000	400,000	3,150,000	0
Nowitna	1,560,000	0	1,560,000	0
Selawik	2,150,000	240,000	1,910,000	0
Tetlin	700,000	0	699,000	0
Yukon Delta	19,624,458	1,900,000	14,716,000	0
Arctic	19,049,236	8,000,000	9,691,000	0
TOTALS	**77,061,617**	**18,676,320**	**51,800,000**	**3,422,968**
Per Cent	100%	24.2%	67.2%	4.4%

BLM Wilderness

The U.S. Bureau of Land Management still manages vast tracts of public land in Alaska. These lands are in danger of being frittered away, through miscellaneous disposals, before their wilderness potential has been adequately assessed and areas of outstanding resource values placed in conservation system unit status.

The threat of land disposals to the integrity of certain large blocks of Alaska's BLM public lands requires action by Congress to mandate permanent retention in federal ownership. Since the passage of ANILCA, land disposals to the State of Alaska and Native corporations, coupled with increasing recreational use and competition for scarce resources, underscore the need for protective designations.

The Central Arctic Management Area (CAMA) is a good example of the fate which might befall other areas. When ANILCA was passed in 1980, CAMA consisted of a 12 million acre block of federally managed land. The ensuing ten years of disposal have left CAMA a mere 3.6 million fragmented acres scattered across the original area.

Using the model of the Steese National Conservation Area and the White Mountains National Recreational Area, BLM must evolve from an agency which warehouses lands for disposal to one that manages conservation system units to protect resource values, including wilderness values.

In the wake of the infamous "no more wilderness" directive by Interior Secretary James Watt in 1981, no BLM lands save those mandated by Sec. 1001 of ANILCA have been studied for inclusion in the National Wilderness Preservation System.

The following outstanding areas should be considered for designation as conservation system units (CSUs) and studied for addition to the National Wilderness Preservation System.

- *The Clearwater Block:* This five million acre block to the east of Denali National Park and Preserve is accessible from all sides by the Alaska road system and contains some of the state's most accessible wild and scenic rivers, rugged mountains and glaciers, and hiking opportunities. The area has seen a dramatic increase in recreational usage and deserves the codification of its existing boundaries and protections. It contains both potential wild and scenic river and wilderness designations.

- *Steese National Conservation Area and White Mountains National Recreational Area:* Congress should mandate wilderness studies for these two existing BLM CSU areas that were blocked by Department of Interior policy.

- *Central Arctic Management Area (CAMA) Lands:* Protective designation is needed for at least a Nigu-Etivluk Wilderness/Wild and Scenic River, an Oolamnagavik-Killik Wilderness/Wild and Scenic River, the Glacier Block, and the Yount Creek Block.

- *TAPS Utility Corridor:* The 6,080,000 acre Utility Corridor was withdrawn by Public Land Order in 1971 to protect the route of the Trans-Alaska Pipeline (TAPS). This is a particularly sensitive area, where three national wildlife refuges and one wilderness national park flank the narrow haul road and pipeline corridor. Changes in ownership may bring about new developments or management conflicts. In the management plan for the Corridor and adjoining Central Arctic Management Area lands released in 1990, and despite overwhelming public opposition, BLM proposes to give almost 0.7 million acres to the state.

The state's goal is to take over the entire corridor north of the Yukon River. State ownership or BLM "multiple use" management risks development incompatible with park and refuge management goals for contiguous conservation system units. Environmentalists must defend against managem ent changes which would result in land disposal, strip development, excessive off-road vehicle use, squatting, mining, and other uses that are incompatible with wildlife and wilderness values.

BLM must not develop or dispose any area studied for wilderness under Sec. 1001. Moreover, Congress should amend ANILCA to reserve corridor lands in federal management for the transportation of North Slope energy resources, and so corridor land management can be coordinated with that of the adjacent national interest lands.

- *NPRA:* The National Petroleum Reserve in Alaska is the size of Indiana (about 37,000 square miles) and is the largest single BLM managed tract in the nation.

While the area has proven to contain less oil than expected when Congress placed it under BLM control in 1976, it has become clear is that it is home to globally significant wildlife resources. In addition, the reserve has unique value for scientific study and has played an important role in arctic research. Four important areas—Utokok Hills, Colville River, Teshekpuk Lake, and Icy Cape-Kasegeluk Lagoon are proposed in this document for national wildlife refuge status. But that does not exhaust the wilderness treasures of the NPRA.

At a minimum, legislation to retain existing protections and protect the following special areas from oil and gas, mineral entry and certain kinds of access, is needed:

> *De Long mountains/Arctic Foothills:* This two million acre area along the southern edge of NPRA offers outstanding primitive recreational opportunities and has the greatest scenic variety of any part of NPRA. The area is habitat for caribou, wolf, and

> grizzly and includes important migration routes. The area adjoins Noatak National Preserve.
>
> *Ikikpuk River Corridor:* This 3.34 million acre area contains significant archaeological and paleontological sites and other opportunities for scientific research. Topographic and ecological features typical of the northern arctic foothills and coastal plain make this area a unique candidate for preservation as well as a link between the mountains and coastal ecosystems.

In addition these areas, the entire NPRA should be studied for other potential inclusions to the National Wilderness Preservation System.

Chugach National Forest Wilderness

ANILCA created no new conservation system units in the Chugach National Forest, at 5.9 million acres the nation's second largest national forest. In lieu of wilderness, the Act established a Nellie Juan-College Fjord Wilderness Study Area (WSA) covering the western portion of Prince William Sound, and directed the Forest Service to submit a recommendation on potential new wilderness by the end of 1983. In 1984, the Forest Service's Alaska region submitted a recommendation to Washington headquarters, but none was forwarded to Congress.

Conservationists recommend a larger wilderness area that includes more forested coastal lowlands and islands such as Knight and Monatague, two of the most scenic in Prince William Sound. In addition, there are many other areas within the Chugach deserving protection, many of which are discussed in the section concerning Prince William Sound, below.

4. Wild Rivers

The Alaska Lands Act designated 25 wild and scenic rivers and authorized studies of 12 rivers for potential addition to the national rivers system. Fourteen of the designated rivers are safely within national parks or national wildlife refuge wilderness areas. Only eleven rivers were afforded protection from development threats on BLM lands or nonwilderness refuge lands. No rivers were designated on national forest lands.

Agency planners determined that nine of the study rivers (including one within national wildlife refuge wilderness) were eligible for inclusion in the national rivers system. However, the Reagan administration did not recommend any of the study rivers for addition to the national system. Remarkably, two of the river studies have never been completed, despite the requirement to complete them by 1984.

An unprecedented federal planning process is now setting the stage for the future of river conservation in Alaska. Federal agencies are required by the Wild and Scenic Rivers Act to consider potential wild and scenic rivers in the land and resource management plans.

The Forest Service has recently identified 112 eligible wild and scenic rivers in its draft revision of the Tongass Forest Plan and the Regional Forester has tentatively recommended designation of 17 rivers. Conservationists are concerned, however, that agency recommendations for designation fairly represent the breadth of potential additions to the national rivers system, and not be limited to rivers within wilderness and park areas. For example, of the 17 rivers recommended for designation on the Tongass National Forest, five are within existing wilderness areas and four are within areas recently protected from commercial logging by the Tongass Timber Reform Act.

The Forest Service has not yet evaluated rivers on the Chugach National Forest, but there are numerous obvious candidates, including the Copper River, one of Alaska's largest, and the Sixmile River, a nationally recognized whitewater stream.

BLM ignored its responsibility to evaluate wild and scenic rivers when it completed its Utility Corridor Resource Management Plan in 1989. The Director of BLM agreed with a conservationist protest that the failure to evaluate rivers violated the law and, in June, 1990, required that this deficiency be corrected. BLM planners developed extensive guidance on the evaluation of rivers in Alaska and determined in early 1990 that twelve rivers which flow through its South Central Resource Area are eligible for wild and scenic status.

Conservationists were stunned, therefore, by BLM's extraordinary reversal in December, 1990 to refuse to conduct further river studies. BLM relied upon a thoroughly flawed interpretation of ANILCA for its decision; political influence by interests opposed to wild and scenic river protection appears to be the actual motivating factor. But wild river advocates will continue to work to see that the agency complies with the Wild and Scenic Rivers Act.

As the Forest Service completes its plans, and as the Park Service and Fish and Wildlife Service identify additional rivers on their lands, hundreds of additional rivers will be studied for inclusion in the national rivers system. Conservationists seek a valid and complete inventory of the resource and the designation of deserving rivers, particularly those located outside existing parks and refuges which are subject to more development pressures.

5. Prince William Sound

On March 24, 1989 we learned to our dismay that even the most pristine lands and waters cannot be protected against the tragic consequences of a massive oil spill. Ironically, however, the *Exxon Valdez* disaster in Prince William Sound became the vehicle for making the entire world aware, for virtually the first time, of the area's priceless fish and wildlife, scenic and wilderness resources. It also served as a grim reminder to conservationists of how pitifully little protection from logging, mining, and other incompatible development activities the Sound had received in the Alaska Lands Act.

While spectacular marine lands and waters of Southeast Alaska were deservedly protected in Glacier Bay National Park, the Admiralty Island and Misty Fjords national monuments, and over 5 million acres of wilderness, comparable areas in Prince William Sound were left to the uncertainties of multiple use management by the Forest Service (the sole exceptions being an inadequate Nellie Juan-College Fjord Wilderness Study Area and vague directions concerning the protection of fish and wildlife habitat in the Copper River area).

Prince William Sound deserves the careful attention it failed to receive in 1980. Protection of the Sound's resources and existing compatible uses could take a number of forms, including an expanded wilderness proposal that takes in Knight Island and Montague Island; national wildlife refuge status for the Copper River delta; wild and scenic river designation for the Copper River; and national recreation area status for other parts of the Chugach National Forest.

6. Marine Resources

Alaska is surrounded on three sides by two oceans and three seas, comprising 57% of the nation's total coastline. These coastal and offshore waters support some of the most spectacular seascapes and assemblages of fish, marine birds and mammals in the world and the most biologically productive ecosystems in the region.

Over-exploitation of commercial fish stocks; entanglement of seabirds and mammals in high seas gill nets; the largest off-shore oil and gas leasing programs in the nation; catastrophic oil spills; ocean bottom dredging for minerals; development in coastal wetlands by the oil and gas industry; littering of beaches with ocean debris; exploitation of walrus for their ivory tusks; clearcutting of coastal rainforests; and population declines in certain marine bird and mammal populations constitute the most serious threats to Alaska's coastal and marine resources.

New and innovative protection strategies are badly needed to protect national and international interests in these resources. This should include future designations of national marine sanctuaries, national estuarine areas, international marine biosphere reserves (or regional seas), and seaward boundaries for established coastal parks and wildlife refuges. This in turn will require development of strengthened alliances between environmentalists, Alaska Natives and fishermen, and improved working relationships with resource management agencies.

To protect complete ecosystems

Most conservation system units designated in 1980 and before are magnificent wild ecosystems fulfilling the dreams of their advocates and taking their place among the world's foremost natural prizes. But even with their great size and relative freedom from outside conflict, they share some management difficulties with conservation units in other states and other nations. Issues of boundaries, inholdings, and other outside conflicts prevent the security in ecosystem management which is necessary for their comprehensive protection.

1. Native Corporation Inholdings

The original legal provision upon which the Alaska Lands Act campaign was based was the directive to study new parks and refuges contained in section 17(d)(2) of the Alaska Native Claims Settlement Act (ANCSA). Beyond the purposes for which it was passed, ANCSA was also important to congressional consideration of other land legislation, such as the right-of-way for the Trans-Alaska Pipeline, selection of state lands subsequent to Alaska statehood, and for designation of our national interest parks and refuges. Nevertheless, the ongoing land selection processes complicated one another.

Native corporations, established by the unique requirements of the Alaska Native Claims Settlement Act, are charged with making profit and providing a return to their shareholders. Sometimes, however, that function is at cross purposes with protecting the land where their shareholders hunt and fish for their subsistence. Commercial development for profit of the natural resources on the land owned by Native corporations harms the very land needed for continued subsistence use by, and cultural survival of, Alaska's Native peoples.

Some of the Native people, like the Gwich'in fighting the development of the Arctic Refuge, have rejected the corporate structure entirely. They fight to retain their traditional way of life. Other villages and regions try to walk a tightrope: corporate competitiveness in a 20th century economy, retention of traditional values in their village.

By the time Congress took up the Alaska Lands bill in the late 1970's, it had already granted 105 million acres of land and 50 to 60 million acres of tidelands to the State of Alaska under the Alaska Statehood Act (1959) and 46 million to Alaska Native corporations as well as individual Native allotments under the settlement of Native land claims (1971).

Most Native land selections were in place by the late '70's, including extensive village land selections within the existing national wildlife refuges and national forests. Many key areas of wildlife habitat were selected. When in ANILCA Congress expanded the refuges, and created entirely new refuges, parks, wild rivers, and national forest wilderness, Native lands were encompassed as "inholdings," as they are called.

Often Native corporations are developing their holdings where economic resources are present, while leaving other acreage, much of it prime fish and wildlife habitat, to sustain the traditional subsistence economies.

One of the most immediate problems for conservation units is the logging of inholdings within the Chugach National Forest. These beautiful, low elevation coastal forests will be logged in the next few years unless a method is found to buy or exchange this land. The Chugach National Forest is a prime recreation and wildlife resource, surrounding Prince William Sound and close to Alaska's most populous area, Anchorage.

When conflicts have arisen between the preservation of subsistence habitat and economic development, some Native corporations owning land within the CSUs have sought to sell their lands or development rights for addition to the units, or to trade their holdings for other economically valuable federal lands and interests. Angoon, the most subsistence-oriented Tlingit village in Southeast Alaska, exchanged its commercially valuable forest selections in the heart of Admiralty Island National Wilderness Monument for equally valuable timber lands in a less sensitive area of the Tongass.

Once acquired for addition to a conservation system unit, former Native lands are managed to provide continued opportunities for subsistence fishing, hunting and gathering, as required under ANILCA.

In attempting to confront the issues presented by the inholdings in the units, the Park Service and the Fish and Wildlife Service have been stymied by the refusal of the Bureau of Land Management, backed by the appointed officials of the Interior Department, to offer BLM land as part of exchanges intended to benefit the parks and refuges. Rather, the administration tried to use the land exchange authority of ANILCA to carve valuable lands, including wilderness, out of the conservation system units for development. (See Exchanges, below.)

Lastly, the Reagan Administration opposed use of the Land and Water Conservation Fund to buy inholdings. Today, the LWCF suffers from the tight federal budget. Extensive Alaskan inholdings compete with deserving acquisitions from every state for scarce LWCF appropriations.

2. Boundary Additions

Alaska's parks and refuges are intended to be models of ecosystem protection. Their original proposed boundaries followed watershed and other natural features rather than the rectangular federal survey system with its biological shortcomings.

However, there were many features of the Alaska situation such as the Native land selections, state selections, deficiencies of information on fish and wildli populations, and last minute political compromises that prevented protection of important areas within reasonable boundaries.

It was commonly expected by the advocates for the Alaska Lands Act that the necessary boundary improvements would be documented during the implementation and planning phases following enactment. As described elsewhere in this report, failures in planning and implementation have been legion.

One of the features of any new planning effort must be a requirement that the managing agency specifically document any and all needed boundary adjustments that should be undertaken to provide the strongest inherent integrity to each conservation system unit. In some cases, the Native land selections may have encompassed nationally significant resources that properly should be in the CSU and those Native corporation owners may be willing to sell the lands to the government. Such an improvement is possible in the Kodiak Archipelago and should be pursued.

However, such improvements cannot be made without the basic identification of resource values, the documentation to show the interrelatedness of the lands and resources to the CSU, and the strong support of an informed public.

These factors will require attention by the agencies and the Congress and should be part of the refinements to the Act passed in the 102nd Congress.

3. Land Exchanges

ANILCA gave the Secretaries of Interior and Agriculture extensive land exchange authority as an essential tool in perfecting the new and expanded conservation system units. During the preparation of land plans during the last decade, Native and state lands have been identified as potential acquisitions for completing coverage of key habitats, for boundary adjustments, and for making management more efficient.

However, the Reagan administration did not use the authority to acquire inholdings and improve the CSUs as Congress intended. Instead it attempted to delete lands from conservation system units for resource development. Some of these attempts were blocked, as, for example, when the courts prevented the Interior Department from trading a tract on Saint Matthew Island, a national wildlife refuge wilderness, to create a port for the oil industry.

In the most serious misuse of the exchange authority, the Interior Department successfully traded acreage in the Arctic National Wildlife Refuge coastal plain to a Native regional corporation (obtaining some corporation lands within a national park), in order to allow private exploratory oil drilling despite ANILCA's prohibition on development on the coastal plain.

Subsequently, the Department proposed a more ambitious exchange that offered several Native corporations (working with oil industry partners) the opportunity to select subsurface rights throughout the Arctic Refuge coastal plain in exchange for corporation holding in several other national wildlife refuges. Initially, the Department claimed it did not even have to complete an environmental impact statement for the proposal under the National Environmental Policy Act (NEPA).

This "Megatrade," as it was called, outraged congressional leaders. Following hearings, Congress amended ANILCA in 1988 to require congressional approval of any land exchange involving lands within the Arctic Refuge.

In order to deter potential similar abuses, ANILCA's land exchange provision should be amended to (1) require the approval of Congress for land exchanges involving any conservation system units; and (2) delete the loophole that circumvents the equal-value requirement by a secretarial finding that an unequal value exchange is "in the public interest."

In addition, as shown by the foiled "Megatrade" and other Interior Department trades involving Native lands, Congress should clarify its intent in Sec. 910 of ANILCA that federal- Native exchanges are not exempt from NEPA requirements. Section 910 exempts the original Native selections and conveyances from the purview of NEPA, but not subsequent land exchanges involving conveyed lands.

To manage the lands properly

1. ANILCA Administration

The administration of the Alaska Lands Act has suffered from severe heavy handed political administration, strained legal interpretation, and poor funding for conservation related activities.

Since the Alaska Lands Act was one of the last actions of the Carter Administration, implementation of the Act was carried out by the Reagan Administration, first under the direction of Interior Secretary James Watt. Not only did the Reagan Administration have a different political viewpoint from its predecessor, it staffed high ranking positions affecting Alaska with individuals who had not supported passage or had been actively opposed to the Act. Probably the most critical of these appointments was William Horn, formerly a staff assistant to Alaska's Representative Don Young, who was appointed as Deputy Assistant Secretary for Alaska and then, in the second Reagan term, promoted to Assistant Secretary of Interior for Fish, Wildlife and Parks.

GAO studies and congressional oversight have documented some of the problems with ANILCA implementation. But conservationists can paint an even grimmer picture. For example: The Interior Department:

- Seized on a unintentional error by Congress in defining "conservation system unit," to open pre-Act Katmai, Mt. McKinley (now Denali), Glacier Bay and the pre-Act refuges to much more motorboat use, airplane landings, and snowmachine use than allowed prior to the Act;

- Opened many of the new national parks to sport hunting by creating a number of dubious "subsistence resident zones" in which any resident—qualified subsistence user or not—can "subsistence" hunt in the parks;

- Ignored the intent of the House that the parks be zoned for areas traditionally used prior to 1980, in which subsistence would continue, and for areas not so used, in which subsistence would not be permitted;

- Blatantly misinterpreted an access-to-inholdings provision to favor private landowners' ingress at the expense of the public's use of conservation system units;

- Rather than abiding by the transportation and utility corridor process of the Act, lobbied for deletion of Cape Krusenstern National Monument acreage for a mining road and railroad route. [Congress subsequently passed legislation authorizing a right-of-way across the monument instead of an alternative route outside the monument.]

2. Management of the Conservation Units

The deficiencies in the administration of ANILCA have been felt most acutely in the management decisions for individual parks, refuges and other CSUs. But those broad decisions do not tell the entire story.

Where the managing agencies needed money or personnel to protect resources or develop a conservation oriented program, those resource requests were often deleted from Administration budget proposals. The influence of the Alaskan congressional delegation, all of whom opposed the Act and who were responsive to some of the Act's most radical opponents, was strongly felt within the federal agencies responsible for managing ANILCA lands which make up 20% of the nation's public lands.

With a few brave exceptions, the regional agency heads have sought low profile compliance with political directions. The overall result is a general lack of a strong resource protection commitment in the Alaskan CSUs.

That more damage has not ensued is due more to the relatively low population and the remoteness of the areas than the traditional reliance on the capability of an adequate, highly motivated and reasonably funded agency staff striving to carry out an innovative and well planned conservation program.

Strong congressional oversight and implementation of the many recommendations contained in this document along with greater appropriations for the agencies will be required to correct these deficiencies.

National Wildlife Refuges

Among many disappointments experienced by the advocates who worked to "do it right the first time" in the Alaska Lands Act, the planning processes for the refuges rank near the top of the list.

For instance, included in all sixteen refuge conservation plans is a statement that the Fish and Wildlife Service (FWS) lacks sufficient biological and ecological information to properly manage the refuge and its resources. Yet, in spite of this admission, the FWS fails to set forth a list of research, inventory and monitoring needs or a schedule for gathering such information. Lack of information is the most frequent justification provided by FWS for the absence of any ecosystem management proposals as envisioned in the Lands Act. Yet, the same plans propose to foster oil and gas exploration, and other "intensive management" developments, including several proposals for habitat modifying game management practices.

The serious deficiencies of these plans regarding the required wilderness studies and recommendations is discussed separately in this report.

Finally, the FWS did not propose a commitment or schedule for revision of the plans. Because the Administration has failed to complete the departme ntal and White House reviews of the plans and wilderness recommendations, not a single plan has been forwarded to the Congress as required in the Act.

Given these insurmountable deficiencies, we believe that the recommendations of the agency are thoroughly discredited. Congress should enact wilderness proposals submitted by the environmental community. Pending completion of new satisfactory conservation plans, the agency should be barred from committing to any major habitat modifying developments in the refuges.

Tongass National Forest

The Tongass National Forest, in Alaska's southeastern panhandle, probably received the most devastating "compromise" in the passage of the Alaska Lands Act. Part of backroom wrangling to bring the bill to the Senate floor, Section 705(a) directed the Forest Service to spend a minimum of $40 million annually—not subject to the appropriations process—so as to offer pulp companies a mandated 4.5 billion board feet of timber sales each decade.

With local support from southeastern Alaska communities, tourism, and commercial fishing interests, the Southeast Alaska Conservation Council and national environmental groups worked over the decade to repeal this destructive provision and to permanently protect an additional one million acres of critical fish and wildlife habitat. In 1990, Tongass Reform finally passed both Houses of Congress and after a House-Senate conference committee delivered the Tongass Timber Reform Act to President Bush and it was signed on November 28th.

Management of the forest will continue to occupy conservation efforts. The Forest Service, which was in the process of preparing a forest plan when the new legislation passed, must drastically revise its draft and reverse some of the assumptions which have guided its policies for decades. Conservationists in southeast Alaska will now focus their attention on the painstaking task of implementing the new law and the specific forest management decisions which will come.

Archaeology, Historic and Cultural Preservation

For thousands of years, Alaska has been witness to continuous human occupation. As one of the great migration routes to North America, Native people followed herds across the exposed Bering Land Bridge, Beringia. Alaska contains millions of important prehistoric and historic sites which ANILCA placed under federal protection as national parks, refuges, forests and conservation areas. These sites can unveil meaningful and significant secrets about the past. The unique prehistoric campsites, burials and subsistence places, historic Native Alaskan sites, Russian churches and settlements, settlers' and trappers' cabins, gold rush mines, and whaling industry sites offer glimpses to the past and show a remarkable continuation of history.

Tragically and increasingly, Alaskan sites—like their counterparts throughout the nation—are being ravaged and destroyed by development, natural and man-made disasters, and looting and vandalism. The vast expanse of the state and limited federal personnel complicate the race to save history. Many sites are looted before they are even located by archaeologists, their information lost forever. Examples include the devastation at Gambell on St. Lawrence Island to the illicit demand for ivory artifacts; unprecedented efforts to protect a newly discovered ancient Aleut burial site from thieves; and the ruin of countless coastal sites by the Exxon Valdez spill, even looting by clean up crews.

ANILCA set the stage to save these treasures from the past, but this is not enough to protect the fragile resource. A positive, strong, unified program among federal and state agencies, universities and Native Alaskans to identify, research, interpret, and protect archaeological sites is necessary to ensure the future of the past. Native Alaskans must have access to the data in order to use it to sustain their heritage and develop cultural preservation centers.

The Eskimos, Aleuts and Alaskan Indians have unique adaptations to the arctic and subarctic. Their social interaction, subsistence patterns and physical adaptations have allowed them to thrive in the region. For decades, though, the native people have faced the slow demoralization of their traditional ways as white culture became more dominant. Critical social issues, including urbanization, confront Native Alaskans as their ways come in conflict with non-native cultures. The traditional lifeways are being lost. Eskimos, Aleuts and Alaskan Indians are working to preserve the ancestral ways.

Programs to help Native Alaskan preserve their heritage will help maintain their cultural identity and unity; encourage youth involvement in traditional practices; provide a broader context for how non-native Alaskans relate to these people; and explain why and how these traditional ways have enabled Native Alaskans to survive in the environs of Alaska. ANILCA provides a framework to assist in developing oral history programs, Native cultural centers, education and training to reintroduce traditions to the young.

3. State/Federal Issues

Submerged Lands

A major amendment of Alaska land law took place in 1988 when Congress amended ANILCA's "submerged lands" provision which governs how lands beneath rivers which have been selected by the state and Native corporations are counted against their respective land selection laws.

Interior officials in the Reagan Administration lobbied for submerged lands legislation promoted by the State of Alaska and Alaska Native regional corporations that resulted in the disposal of an estimated 1.8 million acres of federal land, including the creation of nearly 700,000 acres of new private inholdings in national wildlife refuges.

In addition, in the *Gulkana River* case brought by the State of Alaska and recently upheld by the U.S. Supreme Court, a federal district court determined that rivers and streams are navigable—and hence the lands beneath them are owned by the State pursuant to federal law of title navigability—if they can be floated by a canoe, two-person kayak, or inflatable raft. The previous standard had defined navigability by motorized riverboats in existence at the time of statehood. Thus far fewer rivers had been found navigable and subject to provisions that granted the riverbeds to the state.

This standard for navigability, while important for keeping streams and rivers in public ownership and under public protection, means that the state now owns lands beneath the rivers and streams in the new conservation system units (even wild and scenic rivers), except for the most shallow headwater segments.

In general, rivers serve as the principal travel corridors in most conservation system units. Gates of the Arctic National Park's wilderness rivers, for example, host 90% of the park's use according to the Park Service. The *Gulkana* decision means the state now owns the beds under these rivers. These "submerged lands" are some of the most important public use areas in the conservation system units.

Patchwork ownership has potential for creating inconsistent and conflicting management directives that will have adverse impacts on the resources for which the CSUs were established to protect. Already, state allowed uses of "shorelands" along the navigable rivers or connected navigable lakes may conflict with federal purposes for CSUs regarding boat use, helicopters, sport hunting and trapping, and even mining and gravel extraction.

While the state and federal governments have demonstrated their ability to manage some important resource areas cooperatively—notably in the Kenai River Special Management Area and in the Bristol Bay area, where the state closed all navigable rivers to mineral entry—the outlook for continued cooperative management under the new state administration is uncertain.

The new Hickel Administration, already openly declaring itself to be "anti-fed", is expected to push for major development of the state's river corridors for mining and transportation activities.

In addition, the Department of Interior appears reluctant to exercise its authority to regulate use of state-owned submerged lands to protect upland conservation system lands, an authority clearly established under the federal property clause and in federal case law, including various Supreme Court rulings.

In particular, the federal government has made a formal decision *not* to regulate non-federal lands within national park system units under proprietary jurisdiction. Thus, inholdings in all major park units in Alaska other than Denali are unregulated.

Furthermore, the Bush Administration has refused to regulate subsistence hunting and fishing on navigable waters within federal lands. Since subsistence taking of wildlife involves fisheries, this decision could impair wildlife management.

Reluctance to assert federal jurisdiction over activities on navigable rivers within federal conservation systems, including designated wild and scenic rivers, threatens the future of these public lands and resources.

Transportation Corridors

The creation of transportation and utility corridors in the national parks and other conservation system units in Alaska is strictly regulated in Title XI of ANILCA. That title was enacted to protect the conservation purposes for which the national parks, preserves and monuments were created.

A key element of Title XI is an orderly, comprehensive procedure for locating only necessary access routes on conservation system lands, while thoroughly assessing adverse impacts and feasible alternatives, and adopting appropriate mitigation measures for the protection of the lands and wildlife values. Access to private inholdings (like mining claims) within or effectively surrounded by conservation system lands is also provided for in Title XI.

This carefully crafted statutory scheme ANILCA is threatened by the State of Alaska's insistence that an older, completely unregulated, method for securing access within national parks—"R.S. 2477"—displaces Title XI's requirements.

Revised Statute (R.S.) 2477 is an old federal law that was in effect from 1886 until 1976, when it was repealed upon enactment of the Federal Land Policy and Management Act (FLPMA). R.S. 2477 was one sentence long, simply stating that rights-of-way "for the construction of highways over public lands not reserved for public uses are hereby granted." While R.S. 2477 has been repealed by the more modern concepts of federal land management in FLPMA, valid rights-of-way established before the time of its repeal in 1976 are expressly reserved by FLPMA.

Hitching itself to this reservation of establishing rights-of-way, the State of Alaska, pressed by mining interests, has asserted that the historical existence of even a foot tract or dog sled trail across a national park or monument in historical times guarantees the unregulated expansion of such a trail to a highway of modern proportions, and the transportation of all kinds of vehicles, including heavy machinery and equipment for use in modern mining operations. Finally, the state and the miners claim R.S. 2477 transportation corridors can be established regardless of the resulting damage to or incompatibility with park values.

Neither the state nor the miners have been successful yet in imposing an R.S. 2477 highway on a national park or monument in Alaska, but the new Governor of Alaska, Walter J. Hickel, has let it be known that he intends to pursue the creation of an R.S. 2477 highway specifically to provide access for mining corporations within the flagship of Alaska's parks: Denali National Park. R.S. 2477 thus may become the focus of a major battle in the second decade of ANILCA's existence.

4. Mining

High prices and discoveries of large deposits have spurred a resurgence in Alaska's mining industry, posing a present and growing threat to the wilderness qualities and management of Alaska's conservation system units.

Problems are threefold:

1) Resource degradation. Mining operations have serious environmental consequences: massive habitat destruction, frequently in riparian corridors, and serious water quality degradation. Environmental advocates have waged a long battle to force state and federal agencies to play a more active role in regulating the industry. Major improvements have been achieved, but more is still necessary, particularly in the areas of reclamation and restoration of unreclaimed sites.

2) Access. Access to mining claims is guaranteed, which frequently means road building. The Gates of the Arctic and Noatak National Parks, the Fortymile Wild and Scenic River, and several areas in the Tongass National Forest are threatened by access roads.

3) Inholdings. Patented mining claims are private inholdings which can be used for any purpose. They are prime candidates for incompatible development such as hotels and tourist resorts, as happened in Denali National Park in 1990. In this instance, guaranteed access to the inholding poses additional problems. The National Park Service interpreted ANILCA to mean the public would have to be excluded from the park road if safety problems arose as a result of increased traffic to reach the new resort.

The agencies must to monitor the industry more vigorously to minimize environmental impacts and assure complete reclamation. They need additional regulatory authorities to cope with inholding problems. The Park Service has condemnation authority, but has been prevented from exercising it. Larger Land and Water Conservation Fund appropriations are needed to acquire inholdings.

In addition to mining threats inland, a new threat is emerging on the coast: offshore dredge mining for gold, already begun in Norton Sound off the coast of Nome. These operations dredge the ocean floor in shallow offshore areas, process the dredged sediments with cyanide to leach gold, and dump mine tailings into the ocean. The release of mercury and other heavy metals into the water column allows toxins to enter the food chain and accumulate in the tissues of the fish and wildlife of the region, including those species taken by local residents.

5. Wildlife Conservation

Alaska is the last stronghold for many species of wildlife needing vast habitats in near pristine condition. Nowhere else in the nation do the residents of a state rely so heavily on fish and wildlife resources for their livelihoods. Subsistence, commercial fishing, and businesses dependent upon tourism and recreational hunting and fishing annually contribute more than $1 billion to the state's economy. The seafood industry alone is Alaska's largest employer and generates more than $600 million in annual revenues.

The traditional approach in Alaska has been to manage individual game and commercial fish species for maximum sustained yield. Priority consideration in allocating this yield was given to commercial fishing and sports users.

Growing demands from rural subsistence users and the nonhunting public are challenging this approach. The most contentious wildlife conservation problem in Alaska today involves the allocation of limited fish and wildlife resources between subsistence users and sports and commercial users.

On the one hand, Alaska Natives claim priority consideration in management to meet their subsistence needs. In some cases, they argue for sovereignty over fish and wildlife on their lands.

On the other, sports users claim the position of the Natives is unconstitutional and demand equal treatment under both state and federal law. After winning the equality argument in the Alaska Supreme Court, sporting groups are now suing the federal government claiming that the subsistence priority in ANILCA is also unconstitutional.

Both state and federal management regimes are in disarray as a result of these contentious positions. Federal agencies currently manage for specific subsistence uses on federal lands while the state essentially treats all residents as subsistence users on state lands. The dichotomous management causes great confusion and increases polarization between subsistence and sport user groups. It is increasingly difficult for state and federal wildlife managers to work cooperatively. This in turn jeopardizes achievement of wildlife conservation objectives in national wildlife refuges, parks and other federal lands.

As was made clear in Section 1314 of ANILCA, nothing in the act was intended to either enlarge or diminish the responsibility and authority of the State of Alaska or the federal government regarding wildlife management on the federal public lands, or to amend the Alaska state constitution.

An exception is Title VIII on subsistence. The subsistence exception was based on Congress' finding that continuation of the opportunity for subsistence uses on the public lands is essential to Native physical, economic, traditional and social existence. These uses were seen threatened by increasing Alaska population pressures on subsistence resources through increased accessibility into formerly remote areas, declines in populations of some wildlife species, and by fish and wildlife not always being taken consistent with conservation principles. Furthermore, Congress found that many rural residents have no practical alternative means available to replace food supplies obtained through customary and traditional subsistence hunting, fishing and gathering.

For these reasons, and to fulfill its trust responsibilities over Native affairs, ANILCA made "non-wasteful" subsistence the priority consumptive use of fish and wildlife resources on the public lands of Alaska when restrictions are necessary to protect those resources from over-utilization.

Thus, a principal purpose of most national wildlife refuges in Alaska is *"to provide the opportunity for continued subsistence uses by local residents."* However, these subsistence uses must be consistent with two other major refuge purposes: that is, "to conserve fish and wildlife populations and habitats in their natural diversity" and "to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats." This is in recognition of three fundamental facts:

1. It is in the national interest to protect Alaska's diverse fish and wildlife resources and habitats for their multiple values to society;
2. The U.S. has commitments with other nations to jointly protect, conserve and share migratory wildlife through treaties with Canada, Mexico, Japan and the USSR; and
3. These diverse refuge wildlife resources must be protected and managed if opportunities for subsistence or any other type of human use are to continue.

Future growth will place increasing pressures on Alaska's rich diversity of fish and wildlife throughout their ranges. New development means larger urban population and changes in land use. Rural Alaska's Native population is growing at twice the national average.

The vast majority of species—particularly migratory birds—sojourn in Alaska for only a few months. It is not sufficient to "save them" in Alaska. Conservation strategies for their yearlong habitats or flyways will be needed. In the case of many birds, whales, polar bears, walrus, and some caribou herds, this will require international strategies.

As pressures mount on Alaska's wildlife resources, increased competition among wildlife user groups is inevitable. This is already the case regarding allocations of harvestable surpluses for subsistence, commercial and recreational uses. As the nonhunting, wildlife viewing constituencies grow in size, they will demand greater consideration and involvement in public policy making and management decisions as well.

These societal trends will require drastic changes in management agencies both in terms of philosophy and orientation. They will also require increased funding support of wildlife conservation from all user groups, especially nonhunters.

Rather than continue pursuing the traditional single-species management approach for maximum sustainable yield, wildlife agencies will be required to manage wildlife so as to maintain the natural diversity of all forms of life on earth for its multiple values to society; an ecosystem approach to management.

Greater emphasis must be placed on the findings of science to guide long-term bioregional planning, and on interdisciplinary and multi-agency cooperation. Agency turf battles must be minimized.

If Alaska's diverse wildlife heritage is to contribute maximally to a sustainable society of the future, increasingly large and diverse wildlife constituency groups will have to practice more self-restraint in how they use the land and its wildlife. They will also have to share more when wildlife is allocated since there may be less to go around.

Recommendations

1. Adopt an ecosystem approach to management as the best way to conserve Alaska's diverse wildlife and habitats.

2. Abide by the commitment in ANILCA to provide the opportunity for continued subsistence uses by local residents consistent with conserving fish and wildlife population and habitats in their natural diversity, and fulfilling international treaty obligations of the U.S. with respect to fish and wildlife.

3. Benefit from the expertise and unique skills of Alaska Natives by involving them in cooperative wildlife conservation programs in meaningful and innovative ways.

4. Achieve greater cooperation and cost sharing between federal and state wildlife management agencies, and adoption of more cooperative management agreements.

5. Secure better protection of key fish and wildlife habitats on Native and other privately owned lands (particularly within parks and refuges) through more aggressive acquisition programs and co-management agreements.

6. Develop stronger cooperative wildlife conservation strategies with other circumpolar nations with which Alaska shares its fish and wildlife resources.

7. Increase efforts both in Congress and the Alaska Legislature to secure more adequate funding and staffing of wildlife management agencies in Alaska.

Energy Development and Transportation

Since the discovery of a giant oil field at Prudhoe Bay on the shores of the Arctic Ocean in 1968, oil extraction and transport have dominated the Alaskan economy and to the point where energy corporations account for 85% of the revenues collected by the State of Alaska. Oil industry/environmental battles dominate regional politics.

That the giant oil industry has come to affect broad areas of Alaska and its natural resources even beyond the Arctic Refuge may have been apparent to observers through the year but the world's attention focused on Alaskan oil extraction and transportation problems on March 24, 1989 when the *Exxon Valdez* ran aground on Bligh Reef in Prince William Sound, 800 miles from Prudhoe Bay. The resulting oil spill, the worst in the nation's history spread into the Gulf of Alaska, killed thousands of birds, fish and otters, and polluted shorelines as far away as the Alaska Peninsula.

Subsequent passage of the Oil Pollution Act of 1990 is a strong first step for federal regulation of oil transport. But it is only a beginning. The Oil Pollution Act also provided for an audit of the Trans Alaska Pipeline System (TAPS) but provided no funding authorization. State laws and regulations undertaken after the Exxon Valdez are now under attack by the powerful oil companies. So while some advances followed the *Valdez* tragedy, many massive problems remain, the unfinished agenda of a dirty industry, with the holdings to affect the entire state's future, with the political clout to pursue an agenda which could doom the Arctic Refuge and many other special lands and marine resources as well.

The wreck of the *Exxon Valdez* was not the first Alaskan oil spill, only the largest. Thousands of spills, large and small, have polluted the waters of Prince William Sound and the tundra ponds of the North Slope. Development and transportation of oil from the pads of Prudhoe Bay or offshore rigs through the serpentine pipeline system to the giant tankers in Valdez serve as a reminder that in Alaska, industrial development increasingly threatens adjoining wilderness and waters.

And spills are not the only type of pollution. *Oil in the Arctic*, a report by the Natural Resources Defense Council, Trustees for Alaska, and the National Wildlife Federation, documents air pollution, toxic waste, illegal dumping, and oil spills at Prudhoe. Congressional testimony before the Interior Committe e in 1990 pointed to dangerous corrosive wear on the pipeline itself.

1. Prudhoe & TAPS

Before 1968, Alaska's North Slope was considered the largest intact wilderness area left in the United States. Subsequent discovery and development of oil at Prudhoe Bay has transformed this formerly pristine area into one of the world's largest industrial complexes. Oil facilities now sprawl over hundreds of square miles of arctic tundra and pump massive amounts of air and water pollution into the surrounding environment each year. Tens of thousands of acres of wildlife habitat have been altered or destroyed by oil industry activities on the North Slope and along the Trans-Alaska Pipeline System (TAPS), and violations of state and federal laws designed to protect the environment are routine. Extensive corrosion of TAPS raises the specter of a catastrophic oil spill and of new habitat damage as the pipeline faces comprehensive reconstruction.

Strengthened controls on waste disposal, air and water pollution and habitat destruction by the oil industry are desperately needed as are aggressive new measures to begin restoring areas damaged by the oil industry.

2. Offshore Oil and Gas Development

Oil drilling in Alaska's offshore waters has mushroomed since the Alaska Lands Act passed. During the Reagan Administration, the federal offshore oil and gas program, administered by the U.S. Department of the Interior, leased huge tracts to the oil industry, setting the stage for exploratory operations in the Chukchi, Bering, and Beaufort seas.

Technology for operating in the Arctic marine environment is poorly developed, heightening the likelihood of a spill. Pack ice, strong currents, high seas, cold, darkness, and extreme remoteness frequently render spill cleanup impossible with existing technologies. A spill poses grave ecological risks; the fertile, shallow shelves of the Bering and Chukchi support a rich, plentiful biota. Seabirds, waterfowl, marine mammals, and larval stages of some bottomfish and invertebrates feed and live in the surface areas most affected by a spill. Coastal wetlands support large populations of breeding waterfowl and shorebirds.

The Minerals Management Service has stubbornly refused to acknowledge these threats. Environmental impact statements generated by MMS for leasing proposals often understate the risk of oil field exploration and development activities and do not consider the associated risks of transporting oil from these regions. Much of the scientific research upon which MMS decisions are based is not peer reviewed or published outside the agency. This situation is complicated by US Coast Guard decisions to approve oil spill response plans for industry operations in Alaska's OCS that often incorporate untried and untested technologies, including in-situ burning in the Beaufort Sea, and the use of conventional containment strategies for areas that are covered by pack ice or broken ice for most of the year.

The Interior Department is single minded in promoting offshore drilling even in the areas of most obvious "sensitivity". Most notably, Bristol Bay Lease Sale 92 was held in 1988 in spite of the region's unsurpassed marine biological diversity and world class fisheries. The sale was held against the will of the State government, the commercial fishing industry and Native villages. A congressional moratorium on exploration in Bristol Bay, and other areas in the lower 48, has been the only means to reign in Interior's policy to open the American coast to rampant oil development.

As a result of the federal actions and the State of Alaska's offshore drilling program in nearshore waters, the vast coast of Alaska faces severe long-term impact is for less than an estimated single year's worth of oil and gas at the current rate of consumption.

The imminently threatened Bering Sea and the Alaskan Arctic Ocean waters are migratory routes for numerous species of whales and seabirds which depend on the plankton rich waters and nest in the coastal wetlands. Walrus, seals, dolphins and Steller sea lions feed on the plentiful fish while polar bears and other predators roam the pack ice to the north.

In 1991 alone, 40 million acres of offshore public land in the Beaufort and Chukchi Seas are scheduled to be offered to the highest bidder. These proposed lease sales threaten the Arctic with massive industrial development. The combination of large scale offshore operations, traffic from shorebased facilities, oil spills, waste discharge and pipeline systems proposed across the seabed and the North Slope to the Trans-Alaska pipeline would unleash unmitigable damage to this fragile region.

3. Natural Gas Pipelines

To this point, energy development controversies in Alaska have concerned oil development and transportation. But the North Slope also contains natural gas: 36.5 trillion cubic feet of recoverable reserves.

Despite abundant reserves in the Lower 48 states, pricing procedures, and the expense of construction in Alaska, there are two live proposals for transporting natural gas from the North Slope to the Lower 48 or to Pacific Rim markets.

Yukon Pacific Corporation, a subsidiary of CSX, proposes to construct a Trans-Alaska Gas System (TAGS) pipeline parallel the Trans-Alaska Oil Pipeline from gas fields on the North Slope to a port at Anderson Bay near Valdez. At tidewater, the gas would be condensed to liquified natural gas (LNG) for shipment by specialized tankers to Japan, Korea, and Taiwan.

Yukon Pacific has a presidential finding permitting the export of North Slope gas; approval from the Department of Energy for export of 16.5 trillion cubic feet of this gas; federal right-of-way permit and conditional state lease for the pipeline route; and an approved environmental impact statement for the design and construction of TAGS. While production facilities are in place at Prudhoe Bay, Y-P does not possess purchase contracts with the oil companies which hold rights to the reserves at Prudhoe.

Northwest Pipeline Company has the permits in place to construct an Alaska Natural Gas Transportation System (ANGTS) from Prudhoe Bay down the Alaska Highway through Canada to the Lower 48.

The Northwest Pipeline Company has already spent about $500 million on its ANGTS project, and has exclusive rights to market North Slope gas in the Lower 48. But it may face difficult competition from other producers including those in the contiguous 48 states and Canada.

Natural gas is the cleanest burning fossil fuel, so its use is preferable to use of oil and coal. While a truly efficient and "independent" energy policy requires greater energy efficiency and reliance on renewable energy sources, natural gas use would provide a cleaner burning fossil fuel than alternatives during a period of transition toward a more efficient renewable energy system.

Given that gas is cleaner than oil, that the deposits are proven and exist in an industrialized area; either project could be viewed as a more certain source of Alaskan employment than speculative oil exploration in undeveloped, environmentally sensitive areas such as the Arctic Refuge and Bristol Bay.

Nevertheless, gas pipelines are not panaceas. They present serious environmental problems.

- Methane, a powerful greenhouse gas, can leak into the atmosphere from gas pipelines and LNG tankers. While gas emits fewer greenhouse gases than oil or coal when it is burned, the escaping methane is—molecule for molecule—30 times worse than CO2 as a contributor to global warming. Such lengthy transportation routes would make these particular proposals worse than existing pipelines unless new sealing technologies were developed.

- Nitrogen oxides, a major air pollutant, is emitted as exhaust from pipeline compressors.

- Mixing LNG and oil tanker traffic in Prince William Sound could result in additional environmental and safety problems.

- As a super-chilled pipeline, the gas pipeline proposals present entirely different environmental problems than the hot oil pipeline especially at stream and wetland crossings.

- Sand and gravel extraction sites used for construction of the oil pipeline would not be used for the gas proposals, meaning entirely new sites would be developed. The LNG terminal at Valdez alone would require 11 million cubic yards of gravel fill.

- Compressor stations are proposed for key wildlife areas including habitats of threatened Arctic peregrine falcons that nest on the North Slope's Sagwon bluffs, and migration habitat of the Nelchina caribou herd at Sourdough Creek between Glenallen and Paxson.

- Specific construction problems exists at the Gulkana River crossing and through Keystone Canyon east of Valdez.

- Lastly, while neither project appears economic to construct at this time, there is also no regulatory system that would prevent the start of construction of both proposals, compounding environmental problems.

Energy efficiency and renewable energy sources are the first goals for energy security strategies. But if a natural gas pipeline is to be considered, most environmentalists would prefer to see an all land pipeline routed down the Alaska Highway to connect with existing mid-continent systems. While substantial environmental problems would still need to be addressed, that route would avoid the hazards of maritime transportation and insure domestic use of this energy resource.

A New Vision for Alaska
Jewel of the Earth's Circumpolar Crown

Alaskans remind us that maps of the United States often fail to portray the state in its proper location and at its proper scale. Alaska does not, they chide, exist in a small box in the lower left corner. Viewed in its true place on the continent, it is huge and distant from the population centers of the remainder of the nation.

But that view is also inadequate. Instead imagine your viewpoint to be from space, looking straight down upon the planet at the North Pole. Ringing the pole lies the circumpolar region: Alaska, Canada, Greenland, Scandinavia, the Soviet Union. Alaska is an important component, but not the largest. And it lies remarkably close to its neighbors. They share a climate and prevailing winds; the Arctic Ocean and its currents; the ecosystems of the high arctic, the taiga, and the boreal forest; identical or similar species of plants and wildlife; and a shared history from the peoples who crossed the Bering land bridge, to the great explorations, common economic developments, even the defense installations disseminated across the tundra as world powers faced off in Cold War.

Today, unlike the circumstances of ten years ago, our vision is broader. The Cold War has ended. We can view Alaska in its international significance as a sanctuary for wild places, protected ecosystems, and economies working within those protected places. We have also become more aware of the shared problems of the circumpolar region: air pollution, toxins; survival of marine mammals, fisheries, and migratory waterfowl; the survival and health of Native peoples and cultures.

The breakdown of geopolitical barriers between East and West presents new opportunities to draw together the peoples of the circumpolar world, to share our understanding, to address our common problems, to identify our shared opportunities and to work together in ways that protects our environment and deepens our friendship.

A future strategy to protect "Wild Alaska" requires a global perspective. With the world fast losing much of its wilderness and wildlife, one of humanity's last hopes to save priceless resources on a truly grand scale is in Alaska, northern Canada and Soviet Siberia.

Our Shared Environmental Problems

Alaska's migrating fish and wildlife ignore political boundaries in their annual travels. The same is true of air and water borne pollutants.

Scientists have long known that the Arctic serves as a sink for global pollution. The Arctic is polluted because our planet is polluted. Documented airborne pollutants include sulphur dioxide, nitrous oxides, ozone, heavy metals and pesticide residues. Arctic haze, caused by air pollutants drifting from industries in central and eastern Europe, obscures skies throughout the circumpolar region. Currents from the Atlantic and Pacific carry garbage, oil, mining wastes, pesticides and fertilizers into Arctic waters. Even radioactive emissions are carried to the Arctic by wind and water. Remoteness and relatively fewer pollution sources do not protect the circumpolar world.

Characteristics that make the Arctic ecosystem unique also make it especially vulnerable to such pollutants. Pollutants are slow to break down in the absence of direct sunlight and warm temperatures. The cold, dry climate prevents natural flushing and further dispersion of pollutants. Consequently, pollutants accrue in the Arctic environment over time.

Arctic wildlife are particularly vulnerable to industrial pollution because food chains are short, reproductive rates low, and body fat contents high. Although organic pesticides such as DDT are not used in the Arctic regions, scientists have detected virtually all of them in the fat of animals at the top of food chains—polar bears, whales, seals, some birds and even Native people.

The eight circumpolar nations—Canada, Denmark (Greenland), Finland, Iceland, Norway, the Soviet Union, Sweden, and the United States—met for the first time in September, 1989 in Rovaniemi, Finland to discuss mutual concerns for the Arctic, the preparation of an Arctic sustainable development strategy, and a review of existing international agreements affecting the Arctic.

Each country produced "State of the Arctic Environment Reports" to evaluate knowledge about priority arctic haze, acid rain, ozone thinning, heavy metals, oil, noise, organic contaminants and radioactivity. The most disturbing recurring message is that while pollution seems to be accelerating, knowledge of its effects in the Arctic is woefully inadequate.

The lands and waters of the circumpolar region possess abundant wildlife and bountiful habitats which have survived because so much of the region is unpopulated. However, there are warning signs of change. In Beringia, the region of the Soviet Far East, Alaska and northwestern Canada:

- North American pintail duck population declined from 10 million in 1956 to 2.5 million in 1989. Drought in the southern prairies is sending 50% of all pintails to Alaska and doubling the numbers using the Seward Peninsula.

- The Stellar's eider no longer breeds on the Yukon-Kuskokwim Delta, Alaska, and is considered rare in Yakutia Republic, USSR, center of its world breeding range—pointing to an unexplained, sharp population decline.

- Emperor geese, cackling Canada geese, Pacific white-fronted geese and black brant nesting on the Yukon-Kuskokwim delta all declined sharply since the 1970's, primarily due to overhunting.

- Commercial fishing by more than a dozen nations intensifies in the Bering Sea. Overharvesting is seriously disrupting marine food chains for seabirds and marine mammals as well as catching the birds and mammals themselves.

- North Pacific fur seals which only breed within Beringia, and threatened Stellar sea lions of the Bering Sea are at a fraction of their former population, linked both to loss of their prey stocks from overfishing and to entanglement in fishing gear and other garbage littering ocean waters and beaches.

- Pacific walrus started on a natural decline after a population high a decade ago, but harvest amounts have doubled; sending the population crashing.

- Northern Siberian rivers are polluted and scrap metal and oil barrel dumps are multiplying along roads, reindeer herding routes, and geologists' camps.

- To protect their stock, Asian reindeer herders have eliminated caribou from grazing areas and greatly reduced predators such as bears and wolves.

- South of the Bering Strait, once common polar bears were eliminated during the whaling era. On St. Matthew Island, none have been sighted for years.

Alaska and her neighbors face specific international development pressures. Proposals to develop the coastal plain of the Arctic National Wildlife Refuge have been discussed at length in an earlier section. The Canadian government has been particularly responsive to the dangers posed by oil development in the Arctic Refuge. The two nations share the ecosystem and its caribou herd. The Native peoples who depend on the ecosystem for cultural survival live in both nations.

Offshore, new joint ventures between U.S. oil companies and the Soviet government have already resulted in oil exploration activities in the Soviet Chukchi and Bering Seas. As yet, industry lacks comprehensive strategies and even technology to provide safe transport of oil or respond to oil spills in the weather and ice conditions that exist in these remote areas. The impact on wildlife, particularly marine mammals, has been further exacerbated by the decisions of the National Marine Fisheries Service and the Fish and Wildlife Service to grant the oil industry "incidental take" permits under the Marine Mammals Protection Act for migrating whales and walrus rather than restricting these activities. Similar problems are expected from offshore leasing in the Beaufort Sea off the shores of Alaska and Canada's Northwest Territories.

Other troubling development activities in the border region concern the Alsek-Tatshenshini and Stikine river valleys shared by Alaska and Canada.

Alsek-Tatshenshini

In the 1980 Lands Act, Congress expanded the boundaries of Glacier Bay National Park to include the Alsek River, which, with its principal tributary, the Tatshenshini, comprise a spectacular river system. They rise in the St. Elias Mountains of the Yukon Territory and flow across northwestern British Columbia to a confluence 20 miles east of the Alaska border.

The Alsek-Tatshenshini system is threatened by the "Windy Craggy Project," a proposal by a Canadian company to remove the top of Windy Craggy Mountain and excavate one of the largest open pit copper mines in North America. The complex would include a 70 mile road through the wilderness and a 100 meter high dam to store 48 million tons of acid-generating waste rock. The area is one of the most seismically active in North America.

Conservationists and officials in both nations have raised major concerns with the impacts of acid drainage on salmon fisheries and water quality; the irretrievable loss of wilderness by the roads and bridges; poaching of grizzly bear, wolves, moose, Dall sheep and other animals; the loss of the wilderness river recreational experience in the Park; and continuous travel by ore trucks through the Chilkat Bald Eagle Reserve, home of the world's largest wintering population of bald eagles.

Stikine River

The Stikine River, with its 400 mile long main stem and tributaries, is one of the last free-flowing navigable wilderness rivers in North America. Flowing from British Columbia into Alaska, its Tlingit name means the "Great River."

The U.S. portion of the river is protected by wilderness classification. While some sections of the Canadian portion of the river have been granted protection, significant segments of the Stikine, and important tributary watersheds such as the Iskut River are threatened with logging and roadbuilding proposals and massive hard rock mining projects. Unless Canada protects additional portions of this vast watershed, much of the pristine character of this "Great River" will be lost.

International Parks and Reserves

An unprecedented opportunity exists for the designation of international parks, wildlife refuges, biosphere reserves, world heritage sites and regional seas. Prime candidate areas include an Arctic International Wildlife Range, Beringia International Heritage Park, Beringia International Marine Biosphere Reserve, Beringia World Heritage Site and expansion of the Wrangell/Kluane parks to include the besieged Tatshenshini-Alsek drainages in northern British Columbia.

Arctic International Biosphere Reserve

The 19 million acre Arctic National Wildlife Refuge and adjacent 5 million acre Northern Yukon National Park in Canada together constitute the first international wilderness sanctuary for wildlife in the circumpolar arctic. The Canadian government intends to expand its park to include portions of the Old Crow Flats once Native land claims are settled. Together, the two nations and the Gwich'in people have it in their power to protect most if not the entire 96,000 square mile range of the international Porcupine caribou herd.

The opportunity now exists for American and Canadian environmentalists and the Native community to build on successes to date. It will require additional protections for Canadian lands and for the U.S. Congress to protect the wilderness resources in the entire Arctic National Wildlife Refuge.

Environmentalists should work to establish an Arctic International Biosphere Reserve under the auspices of the Man and the Biosphere Programme (MAB) of the United Nation's Educational, Scientific and Cultural Organization (UNESCO). MAB was launched in 1971 to support harmonious relationships between people and their environments throughout the world. Biosphere reserves conserve examples of the world's major natural regions and the characteristic animal and plant species found there while helping to perpetuate and learn from the region's traditional land uses.

Boundaries of the biosphere reserve would be those encompassing the entire range of the Porcupine caribou herd. The undeveloped Arctic National Wildlife Refuge and enlarged Northern Yukon National Park would be included as core protected areas. An Arctic conservation management agreement should be negotiated among the governments of the U.S., Alaska, and Canada, and the Yukon Territory. The agreement would develop a strategy for perpetuation of wilderness, wildlife, recreation and Native cultural values in the reserve while allowing for sustainable regional economies. Such a bioregional strategy could serve as a model for a new Arctic environmental protection strategy by the eight circumpolar nations.

Beringia

In response to the new climate of goodwill, environmentalists from the US and Soviet Union are joining to protect a shared natural and cultural heritage in Beringia. the former land bridge that connected Asia to North America during the Pleistocene epoch.

One of the most important steps in expanding conservation in Beringia will be creation of an international park. Taking the step from national park or *zapovednik* to international park designation will foster communication and cooperation across political boundaries. A team from the National Park Service and a team of Soviet specialists made a joint reconnaissance of both sides of the Bering Strait in 1989 and discussed the idea with local residents. At their June. 1990 Summit. Presidents Gorbachev and Bush endorsed Beringia Heritage International Park.

The USSR will establish a new park or preserve on the Chukotka Peninsula west of the Bering Strait. The National Park Service intends to designate existing park units in northwest Alaska as its contribution.

The marine and near-shore environments of Bering Strait region continue to serve as an international crossroads for wildlife and indigenous people as well as being the most biologically productive ecosystems in the region. It is a treasure trove for world paleoecology. anthropology. archeology. and history. Member nations of the General Assembly of the International Union for the Conservation of Nature and Natural Resources (IUCN), passed a resolution in February. 1988 urging the USA and USSR to designate this rich and diverse environment as a World Heritage Site.

To focus attention on this marine crossroads and to give official status to the historic relationship between the wildlife and people of two continents, a Beringia International Marine Biosphere Reserve, overlying the now submerged Bering Land Bridge, should be designated, under the Man and the Biosphere Programme (MAB) of the United Nation's Educational, Scientific, and Cultural Organization (UNESCO).

The Beringia International Marine Reserve Biosphere Reserve would be the first international marine reserve and the first marine reserve in the Arctic. Core areas could include the existing U.S.S.R.'s Wrangel Island Nature Reserve and the planned Chukotka Peninsula park as well as the St. Matthew Island, Pribilof and Chamisso Islands, Cape Lisburne, and Cape Thompson units of the Alaska Maritime National Wildlife Refuge. and should be administered by a joint USSR/USA commission with both government and citizen representatives.

In addition, both governments, in cooperation with indigenous inhabitants, should pursue studies of potential bi-national protected sites in Beringia and to pursue cooperative management programs for shared marine species and for pollution control. Outstanding parks, refuges and archeological districts should be nominated as components of the Bering Land Bridge World Heritage Site. Each nation would cooperate in interpretation and protection of the site.

An Arctic Protection Treaty

The United States should lead the eight circumpolar nations to negotiate an Arctic Protection Treaty. Key provisions should be protect the Arctic from worsening pollution by prohibiting ocean dumping and emission of radioactive wastes. Principal sources of acid rain, ozone, arctic haze, heavy metals, and organochlorines should be targeted for control through implementation of best available technologies.

The treaty should renew international obligations for the conservation of arctic fish and wildlife resources by establishment of ecologically-oriented international migratory bird, marine mammal and fishery commissions.

Alaska—an Example for Our Nation

Alaska is America's last significant wild area. "Wild area" refers to those regional biospheres that remain predominantly in their natural condition, relatively unmanaged. and yet are used to produce economic benefits. Wild areas are distinct from wilderness. which is neither inhabited nor economically exploited. Historically, Alaska remained wild, because the subsistence culture of its native inhabitants did not degrade their environment, and the historical exploitation of Alaska's fish, wildlife, and mineral and timber resources did not result in industrialized settlement patterns typical of the continental United States. Alaska's frontier settlement occurred mainly along the coast, disrupting little land area. Not until the Alaska Native Claims Settlement Act and the largest engineering project ever, the Trans Alaska Pipeline, was Alaska threatened with widespread industrial development.

Still, Alaska's geography, its distance from markets, its land ownership patterns and its sparse settlement have been impediments to rapid development. When President Jimmy Carter signed the Alaska National Interest Conservation Lands Act in 1980 obligating conservation protections to 104 million acres of federal land, he explained that "Never before have we seized the opportunity to preserve so much of America's natural and cultural heritage on so grand a scale." A real opportunity in Alaska is not merely preservation, but creation of a new American heritage, which sustains rather than destroys the regional biospheres.

Alaska has a broad base of environmentally sustainable economies that derive from the wilderness resources of the state. These are not just the centuries old Native subsistence economies, but are those economies that derive from living with the land on its terms and reaching commercial proportions in scale. Guiding, fishing, hunting, rafting, canoeing, camping, backpacking, small-scale forestry, flight-seeing, recreational services, photography, arts, crafts, and journalism are examples of economic activities that are all inspired and made economically sustainable by Alaska's wilderness resources. Commercial fishing is the largest employer in Alaska and log homes are a major choice for construction outside of developed urban areas to cite but two major examples. All of these economies rely on a sustainable supply of "materials" and "uses" that derive from the wilderness or minimizing man's impact on it.

Conversely, protecting these environmentally sustainable economies is key to protecting wilderness Alaska. When extractive resource economies that rely solely on exhausting resources such as oil, gas, coal, minerals and timber displace sustainable economies, the overall result can ultimately be destruction of all the economies in the area affected, often with destruction of the natural area as well. Wilderness values sustain these economies and they in turn can help sustain the wilderness values.

Locally based commercial fishermen have launched a buyback of oil leases in the Bristol Bay region; commercial fishermen and conservationists in Prince

William Sound propose to buy timber rights to protect salmon habitat; conservationists, fishermen and small communities in southeast Alaska have protected over one million acres of the Tongass forest for sustainable economic productivity and ecosystem preservation, protecting 9 "million dollar" commercial fishery watersheds; outdoor guides and lodge owners in the Susitna Valley and environmentalists have banded together to prevent the establishment of large scale timber operations in the region, and environmentalists and the Gwitch'in Indian people are opposing oil development in the Arctic Wildlife Refuge to protect the Gwich'in caribou-based subsistence culture. These bioregional based struggles reveal a significant constituency in Alaska whose livelihood depends on sustaining aboriginal bioregional ecosystems.

The Alaska Lands Act (ANILCA) is crafted in such a way as to make this duality possible, if the ecosystems are managed properly. It is in the best interests of protecting both Alaska's wilderness resources and the stability of its economy that this relationship between the viability of the wilderness resource and the regionally sustainable economies be maintained and encouraged.

Alaska is the only state capable of taking a direct path to bioregional sustainability and stability. Each year, millions of dollars are targeted to ecosystem restoration and remnant ecosystem preservation in the Lower 48. In the last ten years, for example, more than one billion dollars have been spent trying to rescue the wild salmon stocks of the Columbia River Basin with few results. The cost of protecting Alaska's healthy ecosystems is much less; an ounce of prevention is always worth at least a pound of cure.

We must develop greater public interest and support for the bioregional strategy. Public policy and programs largely cater to development interests, antithetical to a bioregional strategy. Alaska's grassroots environmental community provides the leadership and the vision to challenge the anti-ecological mindset. Alaska's local economies, dependent on functioning healthy ecosystems, support a constituency favorable to the politics of biosphere protection. This mix of leadership and constituency can lead to biosphere protection.

Alaska—an Example for the World

The American environmental community has been fighting for Wild Alaska since John Muir explored the coastal wilderness, since Theodore Roosevelt reserved the southeastern and south central forests at the turn of the century.

since Bob Marshall ventured north of the Yukon River in the 30's, since the Arctic Wildlife Range was protected thirty years ago—one year after statehood and eight years before the discovery of oil at Prudhoe Bay.

Those environmental advocates from across America that rallied more than a decade ago to work for passage of the Alaska Lands Act carried on a heroic tradition. And they advanced the entire environmental movement by their concept that in America, somewhere, we should try to "do it right the first time": we should protect entire ecosystems with natural boundaries and natural dynamics before unplanned developments scar the landscape in ways that make it impossible. Alaska would be different.

And thanks to their efforts, Alaska is different. Their dreams were largely fulfilled. Despite some painful setbacks and compromise, Alaska's parks, refuges, rivers, and wilderness are the most expansive, natural, and complete in the nation. That there are exceptions, that there have been unexpected and dismaying reversals in policy, that there are new conflicts and deficiencies should not surprise us. That is in part the price of our success.

Alaska, however, is not just a natural treasure trove that must be guarded against those who would plunder her. We must do that and we must make new gains—like the efforts in the Tongass—to continue the quest begun a century ago. For despite the naivete of some who thought a decade ago that the fight for wild Alaska was finally completed, we know now it had just begun.

We also know that if the 1980 Alaska Lands Act was the "Land and Wildlife Conservation Vote of the Century," it is now time to prepare to enter the next century.

And the twenty-first century is very different. Already we have learned of threats to the treasure trove we never understood before. There is an ozone hole over the North Pole as well as the South. The effects of the greenhouse gasses appear to influence the polar climate at a greater rate than elsewhere. The actions of wind and currents have brought arctic haze, acid rain, heavy metals, even nuclear radiation into our special corner of the globe to an extent that we realize the threats to Alaska are not limited to Alaska or even the United States. We must understand and work with all of the circumpolar nations to protect our treasures and theirs.

But there is good news in the new century. The end of the Cold War offers unforseen opportunities to better understand our common heritage, our links, our differences, our common environment, our shared biosphere.

As threats across the globe are used for political advantage by special interests bent on the exploitation of Alaska's wild lands and waters, peace with our nearest neighbors offer a new climate for security and accomplishment.

That Alaska's special places were protected through decades of American environmental effort is satisfying but not sufficient. That the American environmental community is renewed in its commitment to guard these places, to save additional deserving areas, and to see that economic needs of the region are carried out in ways that will not jeopardize them is hopeful. But our efforts will not succeed without the help of people around the world. Industrial development, pollution, waste, war threaten Alaska from beyond its borders. Moreover, the treasures of Alaska belong to the earth, the peoples of the earth, and the future of the earth.

Just as there is one Amazon, there is one Alaska. It is the best that can be offered to our future. We must defend it, protect it, and work with our neighbors—our new neighbors—to ensure its future and that of our planet.

CONGRESSIONAL TESTIMONY OF TED AND FRANCOISE GIANOUTSOS, FOUNDERS OF THE NATIONAL FISH AND WILDLIFE FOUNDATION, ON THE ISSUE OF OPENING THE ARTIC NATIONAL WILDLIFE REFUGE (ANWR) TO OIL AND GAS DEVELOPMENT, SENATE BILL S.341, PRESENTED IN HEARINGS HELD ON MARCH 12, 1991.

The time has come to open the Arctic National Wildlife Refuge (ANWR) to oil and gas development and as a consequence of this action, the time has come to seize the opportunity that this energy development presents to create two much needed national endowments - the National Endowment for Wildlife (NEW) and the National Endowment for the Environment (NEE).

The 1991 Persian Gulf war has dramatically brought all the issues surrounding fossil fuel - especially oil and gas - energy development and use into sharp focus. The war has done this even more vividly than the oil crisis of the early 70's, the creation of OPEC, major maritime oil spills, and the alarming "Greenhouse Effect" as a consequence of burning fossil fuels for energy.

Several major considerations have become obvious to all but the most obtuse observers. First, the U.S. economy and way of life, as is the case in all other industrial nations of the world, are dependent on fossil fuels with oil and gas being, by far, the fuels of choice. Second, America, even though one of the leading producers of oil and gas in the world and having some of the largest proven reserves of these fuels, nonetheless imports 1/2 of its consumption - more now than at the time of the energy crunch 20 years ago! Third, of some 900 billion barrels of proven reserves of petroleum worldwide, two-thirds are located in in the Persian Gulf/Middle East region. The current war only underscores the instability of this area and after the war, the region will hardly become, in the foreseeable future, one of the more stable places in this world.

Fourth, energy conservation is an oxymoron with respect to the American economy, lifestyle, and mindset. Energy conversion to cleaner fuels, not conservation is the answer to our problems, but this can only be accomplished over several decades in a non-disruptive manner if it is not to be counterproductive to the nation and its citizens.

The oil and gas field located under a very minor portion of the Arctic National Wildlife Refuge is considered to be a potential petroleum "elephant" - the term used by the oil industry to denote major petroleum reserves. If this were not the case, the debate to open ANWR would not have raged as long as it has. Finally, despite oil spills, either at the drilling site or in transit - especially by maritime transport - oil and gas development has not proved to be catastrophic to the environment as a whole, even though there have been many instances of localized degradations to the environment, all subject to varying and contradictory assessments.

Even with respect to global warming, the biggest environmental threat stemming from the use of fossil fuel, the jury is still out. AND, in any case, it is impossible to stop burning fossil fuels worldwide overnight. At best, it will take quite some time to do so.

Therefore, the time has come to address the oil and gas development of the ANWR in a responsible and rational manner. ANWR can and should be developed! One can impose even more regulatory restrictions on this development than on Prudhoe to insure minimal adverse environmental impact. It is incontestably in our national security interest to develop ANWR. The Gulf war has proven that beyond a shadow of a doubt. Who can say that it'snot better to drill ANWR than to kill America's sons and daughters to protect Persian Gulf Oil?

ANWR is in an environmentally sensitive area; it is a wildlife refuge but are the lives of caribous worth more than those of America's youth? As ardent wildlife conservationists, we think not! Indeed, we think that the supposed danger to wildlife that oil and gas development poses is greatly exagerated. The Prudhoe Bay experience, 70 miles to the West of ANWR has shown that despite twenty years of intensive oil and gas development the caribou herd as actually increased in size!

Because ANWR is a wildlife refuge and because the oil and gas field underlying a small corner of it is a potential petroleum "elephant" in size, a unique opportunity is at hand to do a great deal for wildlife and the environment for decades to come - indeed throughout the next century! That is why we are here today and this is what we have been working towards for more than five years now. We have testified on the ANWR issue before and have have refined our plan to create the National Endowment for Wildlife as a consequence of opening ANWR to new energy development.

Last year, we became aware of the effort by a group of America's most eminent scientists to create the National Institutes for the Environment (NIE). The rationale for the NIE is obvious when one considers the importance of environmental research and the need for unbiased studies and data. At the direction of Congress, the NAS is currently undertaking a feasibility study. One of the most important considerations is how the NIE would be financed as the proposal envisions a need of some 500 million dollars per year to fund the research and administration of the Institutes. With the current Federal budget deficits, it is hardly likely that Congress will appropriate anywhere near 500 million a year regardless of the desirability of the NIE.

We believe that the energy development of ANWR presents the opportunity to also create a National Endowment for the Environment and thereby fully fund the NIE. The two endowments go hand-in-hand because wildlife is obviously dependent on the environment and wildlife conservation is equally dependent on sound environmental research.

How appropriate it would be to have Governmental revenue from oil and gas development in a wildlife refuge form the basis for both the endowments for wildlife and the environment. After all, what are oil and gas but the fossilized remains of ancient plants and wildlife? And, are oil and gas not natural resources and thus an integral part of the environment of our world? No better use of a portion of the Governmental revenues of ANWR energy development could be found than to create the two much needed national endowments!

Specifically, our revised plan with respect to the Governmental revenue recommends the following the distribution of the entire pool of such revenues to be comprised of the totality of bonus bids, Alaskan royalties, Federal Government royalties, and a special ten percent per barrel fee (well-head price) on all oil and an equivalent fee on all gas extracted. The money would flow into this pool throughout the life of the energy development of ANWR. This pool of governmental revenues should be divided as follows:

1. Twenty percent to the State of Alaska to do with as it sees fit;
2. Twenty percent to the Federal Government to do with as it sees fit;
3. Twenty percent to fund the National Endowment for Wildlife (NEW);
4. Twenty percent to fund the National Endowment for the Environment (NEE);
5. Ten percent to provide for an oil spill clean-up and site reclamation fund;
6. Ten percent to provide for an alternative, clean, renewable energy conversion/conservation fund.

This division of the governmental proceeds of energy development at ANWR would not only provide a reasonable share to the State of Alaska and to the Federal Government to be used in a variety of areas where they both best see fit but also for the first time, a major portion (40 percent) of the revenue coming from a wildlife refuge located in an environmentally sensitive area would be used for nationally desirable endowments which would benefit all Americans for generations to come.

The capital of these endowments and funds should be invested solely in U.S. Government Treasury securities. The majority (two-thirds to three-quarters)should be invested in long-term interest-bearing U.S. Treasury securities to provide annual cash flow for projects and the minority (one-quarter to one-third) should be invested in long-term zero-coupon U.S. Treasury securities to provide for the growth of the funds/endowments.

The oil spill clean-up/reclamation fund could have a fifty-fifty split between interest-bearing and zero-coupon securities. In addition to providing for the growth of the funds, the zero-coupon portion would assure the availability of the money to reclame the site once all energy extraction is completed, i.e. to literally haul-out everything that was hauled into the refuge to extract the energy and to return the site to as-near its natural condition as possible. This fund would be jointly administered by the State of Alaska and the Federal Government.

Clean-energy conversion/conservation fund would be administered by the Department of Energy and would be used to stimulate conversion to cleaner fuels and to reward conservation efforts by individuals, groups, businesses and governmental entities. Any unused monies in this fund or in the preceeding oil spill/reclamation fund would be equally divided between the State of Alaska and the Federal Government at the end of the energy extraction project at ANWR.

The National Endowment for Wildlife should be located in the most obvious place - the National Fish and Wildlife Foundation. Not only does the Foundation have the broadest possible mandate for the conservation and protection of fish, wildlife, and plants of any entity in the United States but in addition, it also has worldwide authority granted to it by Congress. Most importantly, the Foundation has as part of its original charter the ability to solicit and accept participation of individuals, businesses, and organizations in its programs. This provision is exceedingly important as it provides the mechanism by which these entities can participate and become involved directly in the NEW. They may establish restricted endowment accounts (REAs), another of our ideas which we developed and put into practice in 1983 when we founded the National Fish and Wildlife Foundation. These REAs, not only would increase substantially the capital of the endowments but would consequently insure its integrity. No other existing or proposed fund receiving revenues from energy development at ANWR envisioned by various legislative approaches offers the flexibility and benefits of the NEW located in the Foundation where it belongs. Finally, because of the authority granted the Foundation by Congress in its charter, the endowment and the Foundation would be able to directly interact in a programmatic fashion with all other governmental entities (local, state, Federal, and international), all organizations (environmental, wildlife conservation, public, or private), businesses, and individuals, to implement wildlife conservation projects, not only in the United States but throughout the world.

The National Endowment for the Environment should be located where it obviously belongs, the proposed new National Institutes for the Environment to be created by Congress. It would be exceedingly beneficial if Congress would provide when Congress creates the NIE the same type of broad authority for individual /business /or organizational participation that it did in the case of the NFWF. This would result in similar benefits as stated above, specifically a substantially larger capital in the endowment and the assurance of the integrity of the endowment through citizen participation.

The one hundred percent U.S. Treasury securities investment strategy in the above endowments and funds has many benefits. The cost of acquiring the securities is low or altogether non-existent when the securities are purchased directly from the U.S. Treasury or the Federal Reserve banks. The capital is safe and secure. And, more importantly, every security purchased and held in this manner is one less security available to foreigners who already own too much of our national debt (nearly one-third) which was so conveniently and short-sightedly exported during the '80s. Indeed, this investment strategy works equally well for REAs and for funds/endowments established for entirely different purposes than wildlife conservation/environment. It works for education, arts and humanities, historical preservation, etc.. We even came up with a name for it several years ago. We called it the N.E.A.T. concept which stands for National-debt based Endowments for America's Treasures. If applied on a massive scale, these N.E.A.T. endowments/funds/REAS could literally soak up the one-third of our national debt now in foreign hands. These foreigners pay no taxes on the interest earned on the U.S. Treasury securities they hold. If thoses securities were held instead in 501(c)(3) N.E.A.T. funds, no taxes would be paid either BUT the difference is that the interest would go towards safeguarding America's treasures for the benefit of all Americans rather than providing income to foreigners to be used to purchase even more of our national debt and thereby increase their stranglehold on our economy or to purchase American property and/or businesses. It is therefore in the national interest to utilize this investment strategy for the NEW and the NEE and to recommend this strategy to all those individuals, organizations, and businesses wishing to establish REAs in these two national endowments.

The creation of these multi-billion dollar endowments is certainly in the national interest. It is also evident that we should produce as much as possible of the petroleum which we consume, even if it lies beneath a wildlife refuge. It goes without saying that it has become in our national interest to convert as rapidly as possible to cleaner sources of energy. But while we do that, we need to become less dependent on foreign sources of oil and one way to do that is to produce more of our own, especially when in doing so we can impose far stricter environmental controls on domestic production than are imposed by others on foreign production.

Let's open ANWR to oil and gas development. Let's do it with all the environmental controls necessary to minimize any adverse environmental impact to the Refuge. And let's take advantage to this once in a lifetime opportunity that a petroleum "elephant" lying beneath a wildlife refuge presents to create the NEW and the NEE which will insure major funding for wildlife conservation projects and environmental research throughout the twenty-first century.

Wildlife Management Institute

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Statement of Lonnie L. Williamson
before the
Senate Committee on Energy and Natural Resources
on
Oil and Gas Development on the Arctic National Wildlife Refuge (S. 341)
on
March 12, 1991

Mr. Chairman:

I am Lonnie L. Williamson, vice-president of the Wildlife Management Institute. The Institute, staffed by professional natural resource managers, has been dedicated to the restoration and improved management of wildlife since 1911.

The matter of oil and gas development on the Arctic National Wildlife Refuge (ANWR) is a difficult issue. Outstanding wildlife resources depend on that refuge, including caribou, waterfowl, brown and polar bears, wolves, Dall sheep, muskoxen and others. However, the potential for recovering petroleum on ANWR is said to be significant also. And, we are told that our nation will need any oil and gas that may be located.

The Institute does not have the expertise to debate whether recoverable oil and gas deposits exist on ANWR. Neither are we equipped to determine if the national interest would be served at this time by developing any deposits that may be there. Common sense tells us, however, that recoverable ANWR energy resources likely will be needed at some point in time.

As renewable resource managers, we do know the needs of ANWR wildlife, and that oil and gas operations could have significant negative affects on wild animal populations, which are of national and international importance. Therefore, our concern is to make sure that the public's interest in wildlife is considered and accommodated in the decision-making process. With future petroleum extraction on the refuge a clear probability, our major concerns must include adequate environmental controls and development operations and assured mitigation for refuge amenities that are unavoidably lost.

If Congress decides to open ANWR to oil and gas development, it should do so only under stipulations which assure that the deleterious impacts on fish and wildlife are minimized, and which direct a substantial portion of any oil and gas revenues into programs that support the purposes of the National Wildlife Refuge System.

Title IX of S. 341, in our view, contains fairly strong environmental safeguards for oil and gas development on ANWR. We are pleased to support those provisions. But we believe the bill to fall far short of directing adequate compensation to the National Wildlife Refuge System for inevitable losses of scenic and ecological resources that are bound to occur, no matter how gently exploration and development proceeds. We strongly urge the Committee to rectify this oversight.

The Institute recommends that a special National Wildlife Refuge System Enhancement Fund be created and that half of all ANWR oil and gas revenues be directed to it. The fund receipts should be invested in government securities, with the interest appropriated annually to benefit the Refuge System.

We suggest that the perpetual fund could be used for such laudable purposes as contaminant research and clean-up, water rights purchases, inholding purchases in Alaska, recreation fishing and hunting programs, and refuge interpretive programs. The idea, Mr. Chairman, is to use these receipts to benefit the system of public lands that were degraded to supply the needed energy resources. Never again are we likely to have such an opportunity for assuring a future for wildlife refuges and the resources that they protect.

Sea-Land

Sea-Land Service, Inc.
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201-603-2249

ALEX J. MANDL

Chairman
and Chief Executive Officer

March 12, 1991

The Honorable J. Bennett Johnston
Chairman
The Energy and Natural Resources Committee
United States Senate
364 Dirksen Building
Washington, D.C. 20510

Dear Chairman Johnston:

Sea-Land Service, Inc. submits this letter for the record in support of Title IX of S.341, the National Energy Security Act of 1991. This Title, as you know, would authorize oil and gas exploration and development along the Coastal Plain of Alaska's Arctic National Wildlife Refuge.

Sea-Land Service, Inc., a unit of CSX Corporation, is the largest U.S.-flag container shipping company, and a leader in intermodal freight transportation and related services. Our company operates more than 70 container ships in U.S. and foreign trade and serves 80 ports in 70 countries and territories. Sea-Land has served Alaska since 1964, affirming our commitment to quality, year-round service in 1988 with the introduction of three new state-of-the-art container ships.

When Sea-Land last wrote to Congress in support of legislation authorizing oil and gas leasing in ANWR we cited the need to secure America's energy future as a national priority. The experience of the last nine months has made that need more compelling than ever. The crisis in the Persian Gulf has underscored our nation's vulnerability to events immediately beyond our control. Indeed, that conflict has forced all of us to consider anew our country's energy preparedness. The time has come to take concrete steps toward a program of thoughtful, controlled energy development before another emergency forces a hasty and ill-conceived approach. Enactment of a program to carefully develop the oil and gas resources of the Coastal Plain of ANWR is one important step in that direction.

The Coastal Plain of ANWR comprises only a small part of the wildlife refuge, roughly eight percent of the 19 million acre total. Moreover, the Office of Technology Assessment estimates that of this, less than one-eighth of one percent of the land would be *affected directly by the roads and pipelines associated with oil production. Environmental impact beyond this should be minimal, if the nearly two decades of production experience on the North Slope is any guide. Reams of studies conducted since that time have yet to yield any evidence that fish or wildlife species -- including the herds of caribou -- have been adversely impacted.*

Yet, the benefits of ANWR development to the country -- to its citizens -- could be enormous. It is estimated that 25 percent of the country's future domestic oil supplies could come from the Coastal Plain if Congress approves its development. It would mean new business to a multitude of American companies, including Sea-Land and the other U.S.-flag carriers that serve Alaska. Not only will the oil and gas companies directly engaged in the ANWR need supplies well-suited to be carried aboard Sea-Land vessels, but the ancillary state-wide economic activity will mean new cargoes for all American carriers. Vendors all across the U.S. will be similarly effected.

Title IX of S.341 is nearly identical to the ANWR legislation reported to the Senate by your Committee two years ago. That bill was approved only after months of hearings and careful consideration. It should serve as a solid endorsement of what lays before you at this time. Title IX represents a balanced and achievable program of energy production and environmental protection. Sea-Land urges the members of the Senate Energy Committee to approve it without delay.

Sincerely,